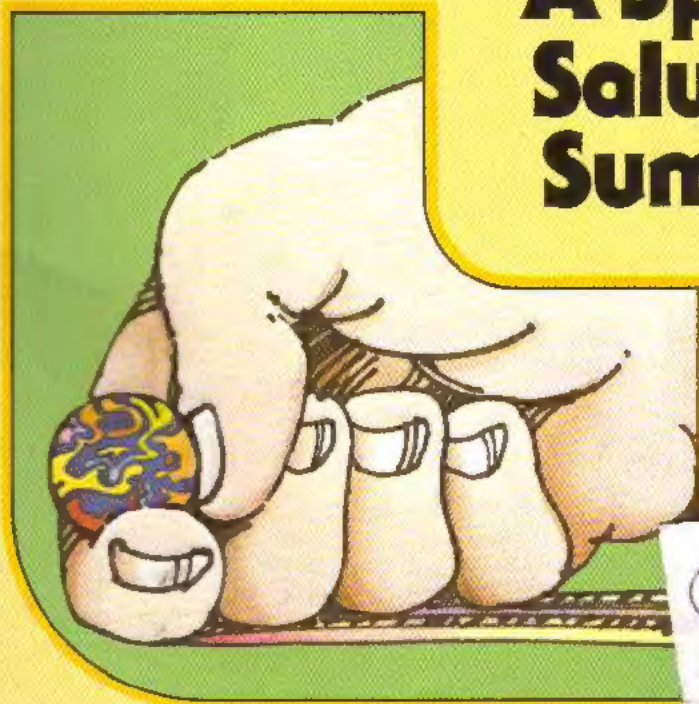


# 321 CONTACT™



**Inside:  
Hot Stuff!  
A Special  
Salute to  
Summer**



STEVEN CLICK  
2250 WOODLAND AV  
COOKEVILLE  
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# Hello, Summer!

It's summer! Time for watermelon and ice cream, hot days and cool nights.

What's that? You've run out of good ideas for summer fun? Don't turn on the TV set just yet! There's plenty of neat stuff to do, with things as ordinary as a stick and as delicious as watermelon.

To find out how to make the most of your summer, just turn to page 17. That's where our special summer activity section begins.

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SEPTEMBER ISSN 0195-4105



Page 4



Page 8



Page 10



Page 33



Page 36



Page 40



Page 42



# 321 CONTACT

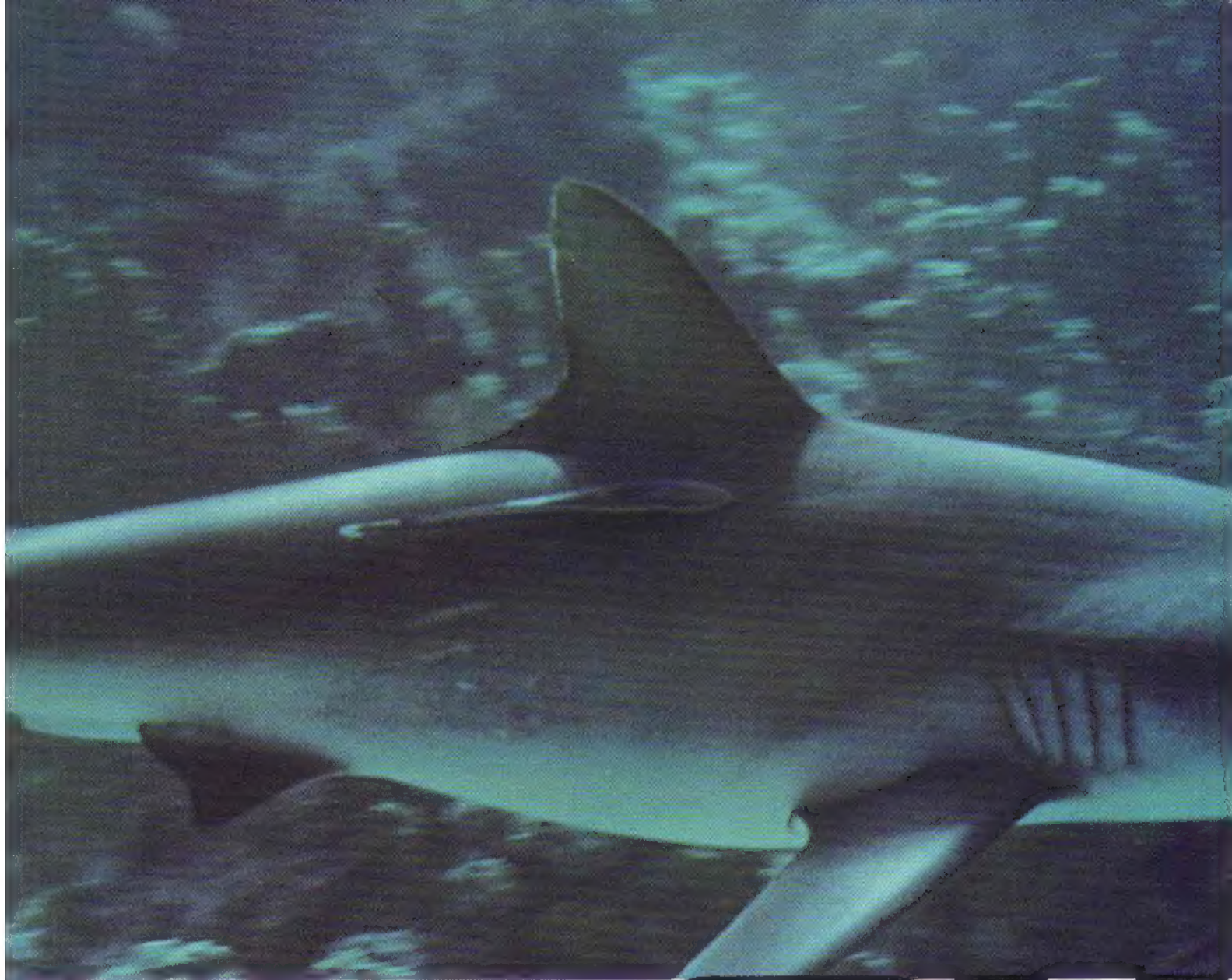
## Featuring This Month

- 4** Shark!: The Toughest Animal in the Ocean
- 14** Eugenie Clark Explores the World of Sharks
- 18** Outdoors
- 20** Camping Out
- 22** At the Water
- 24** Keep Cool

## Plus Our Regular Departments

- 8** Factoids
- 10** Any Questions?
- 12** Earthdays: September
- 26** Experiment: Sun Power
- 28** Reviews and Previews
- 30** Do It!: Puzzles
- 33** Pocket Zoo: Animals of the Everglades
- 36** Busy Bodies: Lungs
- 40** List of the Month: Weird Food
- 42** Timeline: Bicycles
- 46** Did It!: Puzzle Answers
- 47** Skywatch: Earth





# SH

A fin sticks out of the water. It begins moving quickly towards a swimmer. People scream. The swimmer panics. A shark attacks!

That kind of scene made *Jaws* one of the most frightening and popular movies of all time. But sharks have been scaring people for hundreds of years—long before they became movie stars.

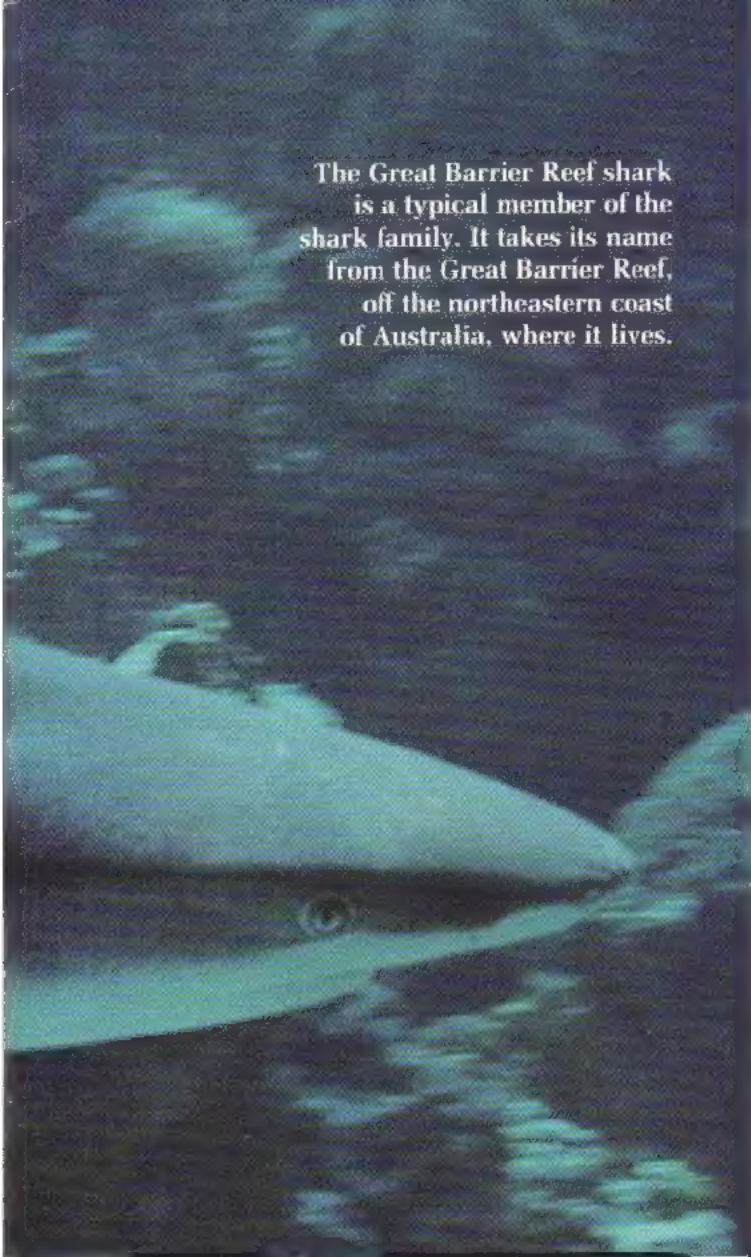
There are 250 kinds of sharks. Most of them—more than 220—are not dangerous. Some sharks, in fact, are even frightened by people. But the other 30 types of sharks are very dangerous. Most people are right to fear them.

People aren't the only ones who are afraid of sharks. Most fish are, too. Sharks are among the strongest and toughest animals on earth. They have been around for more than 60 million years. Other animals have disappeared or changed greatly since then. But sharks have survived. In all that time, they have hardly changed at all.

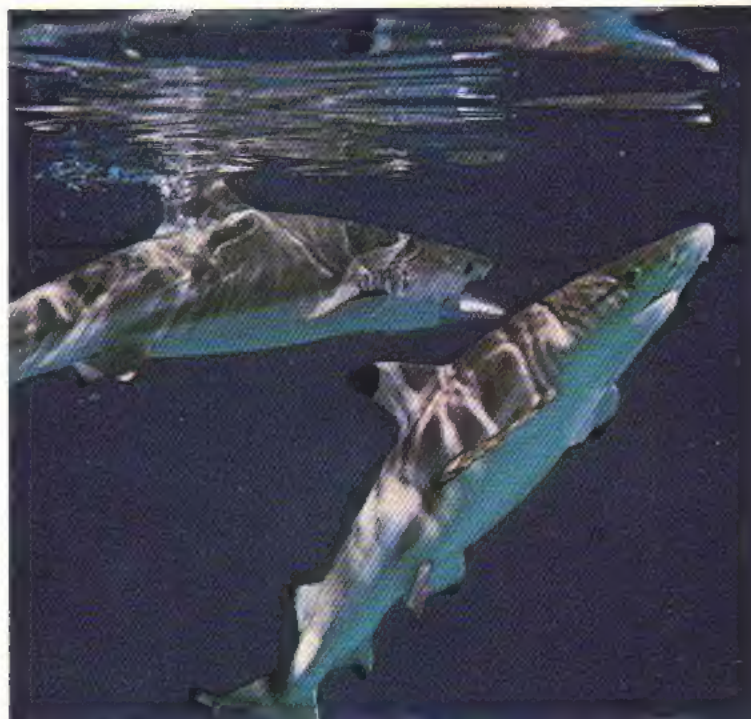
Most sharks live in warm waters. But they can live anywhere—from the coldest arctic waters to the warmest tropical oceans.

They will swallow almost anything. One fisherman opened up a blue shark's belly to see what





The Great Barrier Reef shark is a typical member of the shark family. It takes its name from the Great Barrier Reef, off the northeastern coast of Australia, where it lives.



**Above:** These two sharks are enjoying their favorite meal of small fish. Only four to five feet long, black-tipped reef sharks are not the man-eaters you might expect. They're quite timid, and will swim away when approached by people.

## THE TOUGHEST ANIMALS IN THE OCEAN

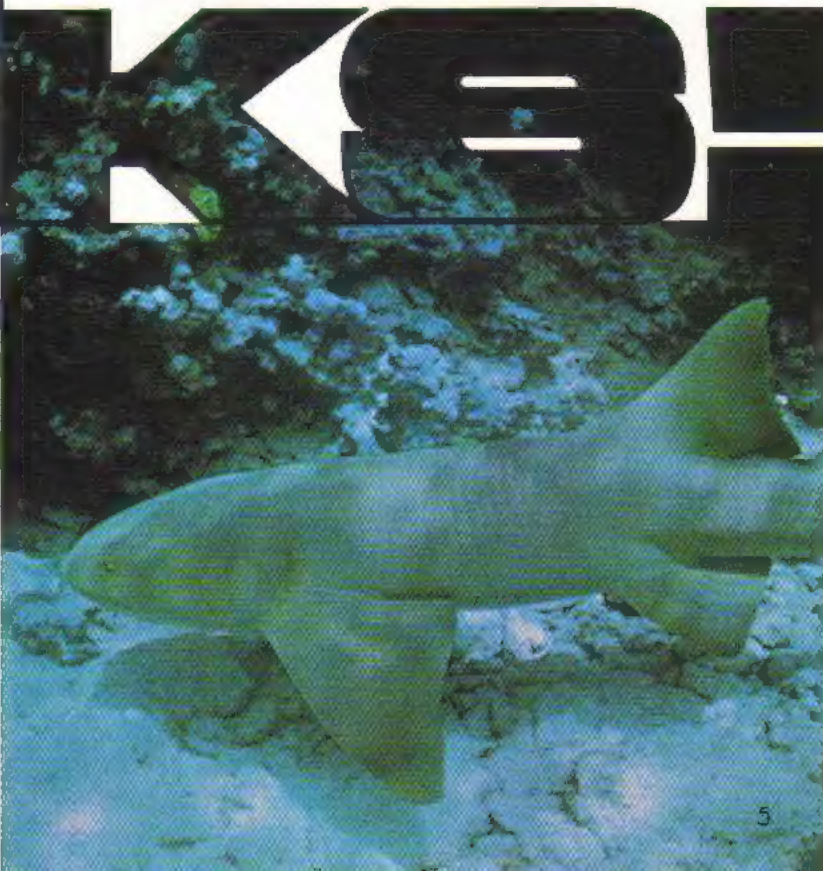
# SHARKS!

by Joan Chambers

it had eaten. He found hundreds of dead fish. He also found two soft-drink bottles, a flashlight, a rubber raincoat, a tennis shoe, a soup kettle and a jar filled with nails!

Sharks can be huge, like the great white shark in *Jaws*. That one grows to almost 25 feet, and can weigh as much as 7,000 pounds. The tiny dwarf shark is only about six inches long. (continued on next page)

**Right:** The nurse shark is one variety that is sometimes known to attack humans. When it is fully grown, it can reach a length of 14 feet.







**Right:** The blue shark is found in the Atlantic, sometimes as far north as New England. It can grow to more than 12 feet.

**Left:** The Port Jackson shark lives in the waters off the coast of Australia. It has sharp teeth for crushing the shells of oysters, which are its main food.

**Below:** The great white shark can reach a length of 25 feet and a weight of over 7,000 pounds. Seen in the movie *Jaws*, it is one of the most dangerous sharks.



Even the shark's skin is dangerous. Most fish have scales covering them. But sharks have sharp little points, like teeth, all over their skin. This makes it so tough that carpenters once used sharkskin for sandpaper!

### **A Strange Type**

Sharks are different from other fish in many ways. Most fish have skeletons made of bone. Shark skeletons are made of softer stuff, called cartilage (CAR-ti-ledge).

Most other fish lay eggs. They take care of their baby fish. Sharks are different. Most of them don't lay eggs. Their young are born alive. These

newborn little sharks are a lot like the adults. They're born with sharp teeth. They take care of themselves from the minute they're born. They'd better. Sometimes, a hungry mother shark may eat some of her babies!

The chances are very good that a little shark will live a long time. The shark's only natural enemies are other sharks. Usually, nothing eats a shark but another, bigger shark.

Sharks can hear and see very well. That helps them find their dinner—other fish—from very far away. But the most important sense for a shark is smell. Sharks are attracted by blood.





Even from a long distance, they can smell tiny amounts of it in the ocean. Scientists who dive underwater usually get out of the water if they have even a tiny cut.

Few people ever get close to a shark. But if one of the dangerous types of shark does come near, shark experts say people should not move quickly. They advise them to stay still or swim very quietly away. Sharks usually do not bother people who do not bother them. Unless, of course, the shark is a movie star.

A scientist is working on a way to protect people from shark attacks. You can find out more about her on page 14.



**Above:** The carpet shark can blow up to twice its normal size by swallowing air or water. Its name comes from the often bright, carpet-like patterns on its skin.

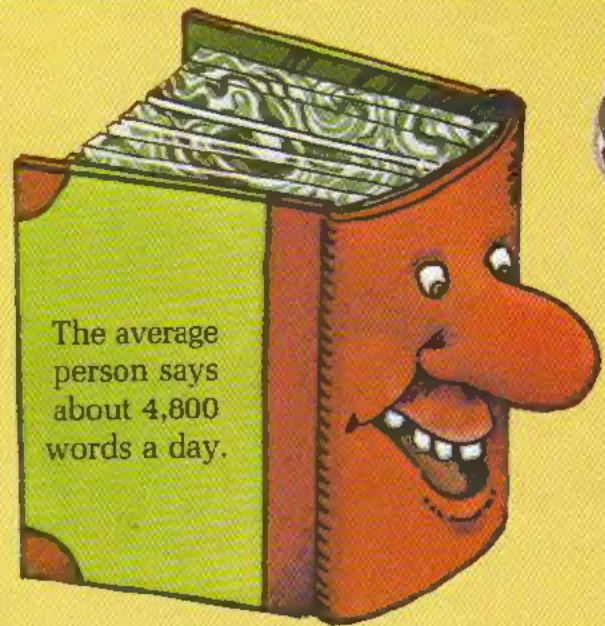


**Left:** The horned shark is found in the waters off the coast of California. Because of the shape of its head, it is also called the pig shark.



# Factoids

What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.



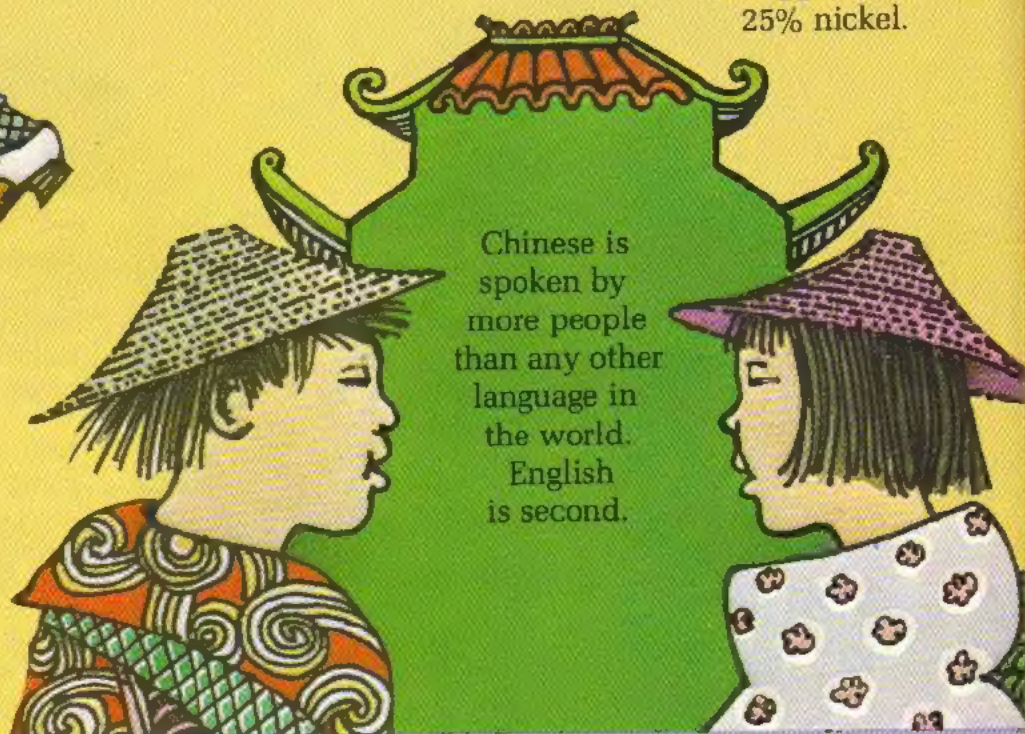
The average person says about 4,800 words a day.



Greg Fox and Steve Bennett set a record by seesawing for 26 straight days.



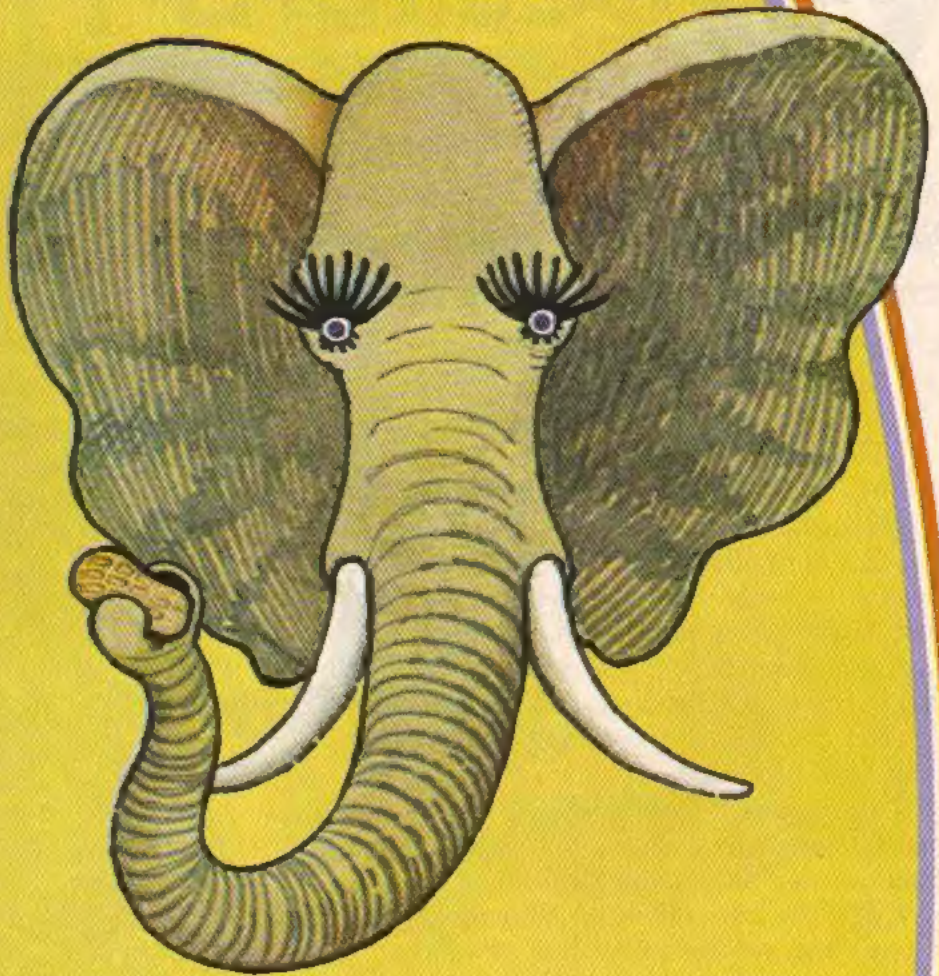
A nickel coin is made of 75% copper and 25% nickel.



Chinese is spoken by more people than any other language in the world. English is second.

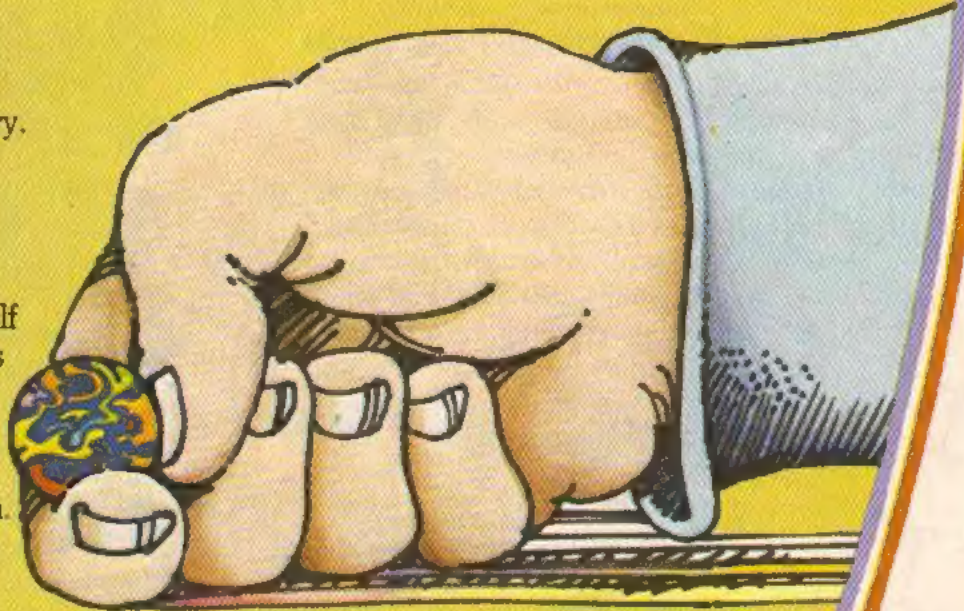


An elephant's eyelashes are  
4 to 5 inches (10-12.5 cm) long.



About 150  
tornadoes hit  
the U.S. each  
year, more than  
any other country.

More than half  
of the world's  
marbles are  
made in  
Clarksburg,  
West Virginia.





# Any Questions ?

by Joanna Martin

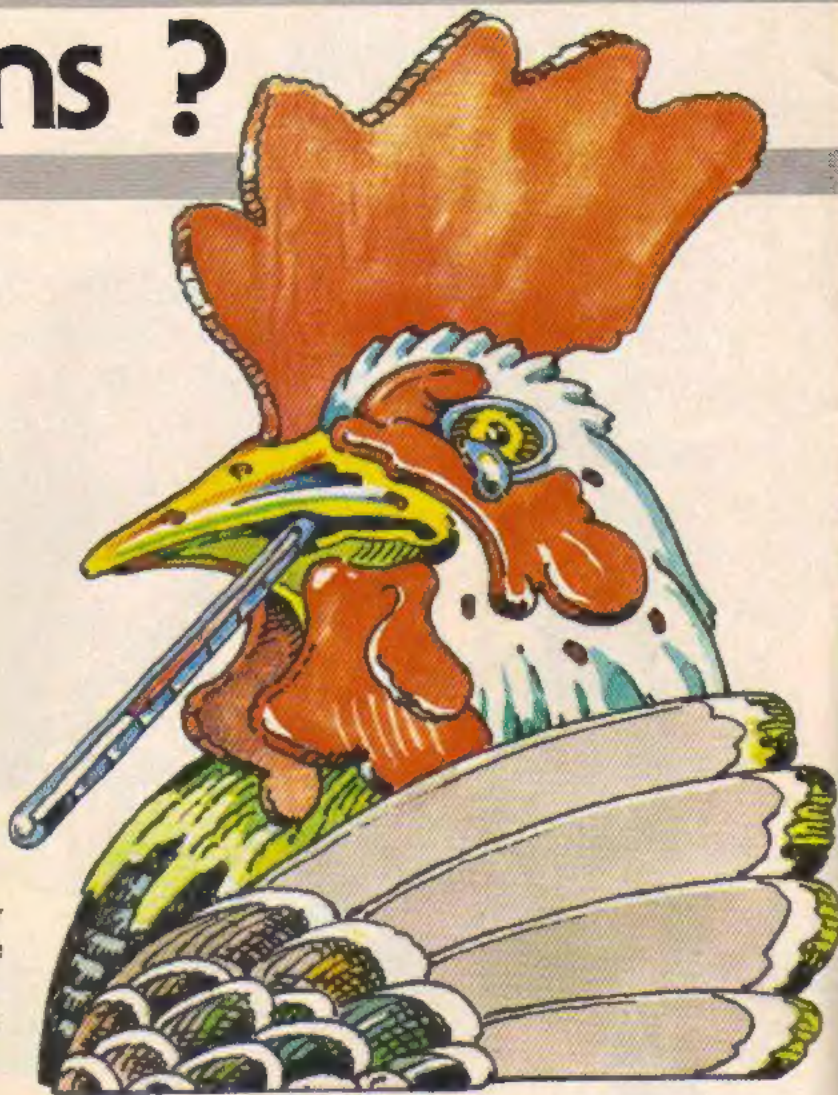
## Why can you catch colds over and over when you can catch chicken pox only once?

Both chicken pox and colds are caused by a kind of germ, called a virus. But there are hundreds of kinds of cold viruses and only one chicken pox virus.

When you catch the chicken pox virus, your body fights back. It produces chemicals in your bloodstream, called antibodies. They fit the chicken pox virus exactly, like pieces of a jigsaw puzzle. They stop the virus in your bloodstream from growing. Chicken pox antibodies stay with you a long time. They keep you from getting chicken pox again, but they don't protect you from other viruses.

The cold virus antibodies work the same way. They match the virus that causes your cold. But there are hundreds of cold viruses. So an old antibody isn't good against a new, different, cold virus. If you catch a new virus, you get a new cold. Ah-choo!

Question sent in by Melinda Aldrich, Raleigh, NC



## Why don't the pyramids of Egypt sink?

The pyramids have been standing for 4,500 years. The biggest one weighs over 11 trillion tons, but it doesn't sink into the sand.

The main reason is where they are built. You think of the Sahara Desert as nothing but sand. But underneath is rock, called limestone. The pyramids were built where the rock is pretty close to the surface of the desert. This solid foundation keeps them from sinking.

The shape of the pyramids helps, too. At the base, the largest ones cover as much space as ten football fields. This spreads the weight out and helps keep them up.

To show how this works, try a little experiment at the beach. Take a few steps. See how much your feet sink into the sand? Now lie on your back on the sand. By spreading out your weight, you hardly sink at all!

Question sent in by Keith Woodbury, Memphis, TN





Is there something that you have been wondering about, for which you can't seem to find an answer? We just might be able to help. Send your question along with your name, age and address to:

**Any Questions?**  
**3-2-1 CONTACT**  
**P.O. Box 599**  
**Ridgefield, NJ 07657**

## Why does Mars have red dust?

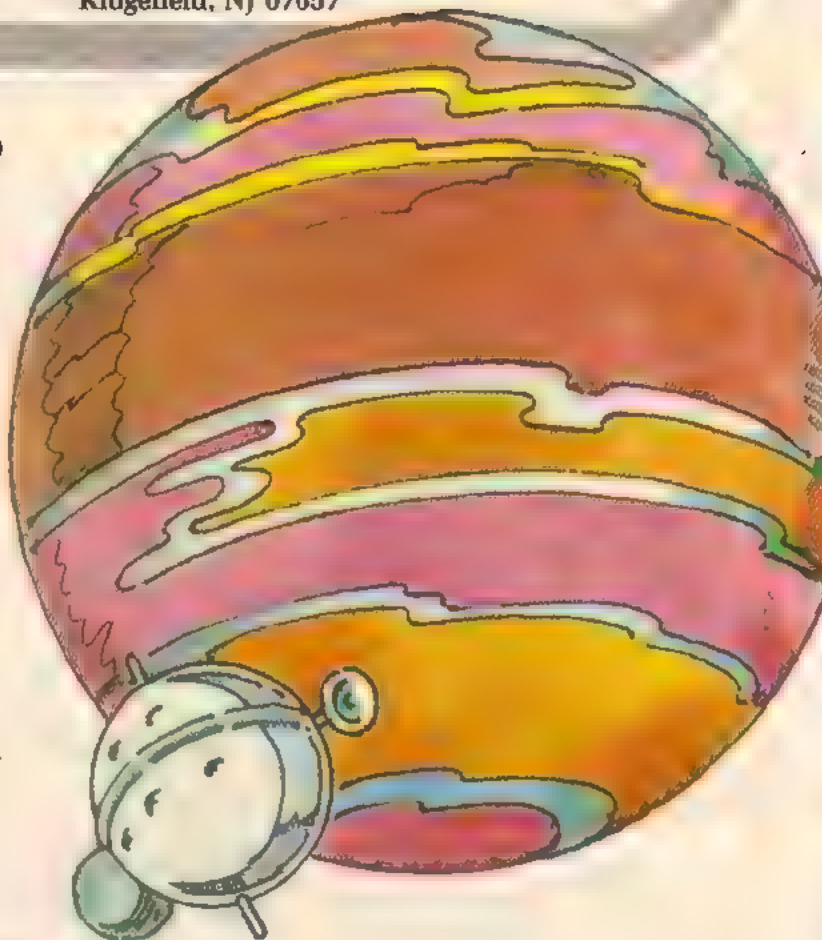
If you've ever seen a picture of Mars, you know why it's called the Red Planet. Much of it is a rusty red color.

Scientists think this color is caused by a kind of rock called limonite (LIE-mo-nite). They know there is limonite on earth. In places like Georgia and Alabama, it has turned some of the soil red—almost the same color as Mars.

Limonite is made when iron mixes with oxygen. If the rocks of Mars are limonite, there must be iron there. It also means there was once more oxygen on the planet. Today, scientists are sure, there is little oxygen on Mars.

There are winds on Mars that blow at speeds up to 120 miles an hour. Over millions of years, they wore away the stones and created the dust. Even today, Mars sometimes looks pink and hazy instead of red. That's just a Martian storm blowing dust around the planet.

Question sent in by Stephen Moore, Edna, TX



## How do hurricanes form?

This is the season when hurricanes happen. All they need to get started is moist air and heat.

A hurricane begins on the ocean, where the sun has made the water warm. Water evaporates, mixing into the air. This warm and wet air starts rising.

Cool air then rushes down under the warm air. That's when the real trouble begins. The cool and warm air start spinning round and round. This causes strong, swirling winds to form. Only in the storm's center, called its eye, are things quiet.

The storm keeps growing. The sea winds around it push the hurricane slowly across the ocean. Clouds form inside the storm. Rain falls. Thunder crashes. Winds blow at 75 miles an hour!

When the hurricane hits land, it may do terrible damage. But hitting land also causes it to lose much of its power. Finally, the great storm blows itself out.

Question sent in by Alicia Hunter, Detroit, MI





SUNDAY

MONDAY

TUESDAY

WEDNESDAY

## Earth Days

Sept



**1** The first woman telephone operator is hired in Boston. Until then they were all men. (1878)



**2** China opens its first TV station at Peking. (1958)



The first incubator for infants is used in New York City. (1888)

7



8

The first balloon flight by a native-born American is made by Charles F. Durant (1830)

9



The Pilgrims set sail in The Mayflower from Plymouth, England. (1620)

16

10

11

The first American lighthouse is lit. (1716)

14

15

**21** Birthday of H.G. Wells, famous science fiction writer. (1866)



Autumnal Equinox, the first day of fall. There are equal hours of day and night.

23

24



28

29

30

Birthday of Hans Geiger, inventor of the Geiger Counter. (1882)





WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

# September



The first Boy Scout rally is held in England. (1908)

4

5

6

The discovery of the North Pole is announced. (1909)



The chicken "Penny" lays seven eggs in one day in England—a record! (1971)

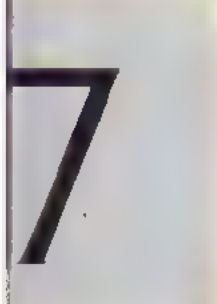
11

12

U.S.S.R.'s Lunik II becomes the first satellite to land on the moon. (1959)

13

Francis Scott Key writes "The Star Spangled Banner." (1814)

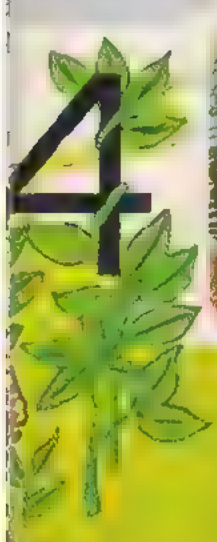


18

19

The first cartoon movie is shown in New York City. It stars Mickey Mouse as "Steamboat Willie." (1928)

20



25

Balboa, the Spanish explorer, reaches the Pacific Ocean. (1513)

26

Birthday of Johnny Appleseed. (1774)

27

The first matchbooks are patented. (1892)






# Eugenie Clark Explores The World of Sharks

by April Koral

Deep underwater off the coast of Mexico, two divers are following a very dangerous shark. Suddenly, the shark whips around and heads straight for them. They freeze, but the shark keeps coming. Then, just two feet from them, it stops.

The two divers—both women—watch quietly. Nothing moves. Then as quickly as it came, the shark swims away.

This is not a scene from a movie. And the divers are not actresses or stuntwomen. They are scientist Dr. Eugenie (You-JEAN-ee) Clark and one of her students.



Dr. Clark takes a close look at a shark in an underwater cave. Chemicals in the cave's water make the shark giddy. Dr. Clark hopes to pet it!





**Left** "I have a special interest in sharks," Eugenie says. "If you dive in the sea there are sharks around. Chances of running into them in the far-away places I dive are even greater."

**Below:** Eugenie would like to spend more time in the ocean near sharks. Usually, she says, they're afraid. At her slightest movement they swim away.

## Face-to-Face with a Shark

Dr. Clark is an ichthyologist (Ick-thee AH-low-jist). That's a scientist who studies all kinds of fish. Being face-to-face with a shark is nothing unusual for her. She has swum in most of the world's oceans, looking for sharks. This summer, she's working on a special project at the Red Sea in Israel. She hopes to find something in the water there that will protect people from sharks!

Here's how. In 1972, Dr. Clark was studying a small fish that lives in the Red Sea called the Moses Sole. She discovered that Moses Sole can give off a milky white liquid that keeps sharks away. Dr. Clark hopes to find what is in the Moses Sole's liquid that sharks don't like. Then she will return to her laboratory and try to produce more of this substance. Some day, she hopes, scuba divers and swimmers could spray it on themselves—and be safe from sharks.

## A Little Kid in Love with Sharks

Dr. Clark first became interested in sharks when she was nine years old. On Saturdays, her mother would take Eugenie to an aquarium in New York City. Eugenie would spend the whole day there. "I just wandered around and looked at the fish tanks," she remembers. "I was fascinated with the largest tank. There were some small sharks in there. I looked in and felt like I was on the bottom of the sea. I felt very much at home."

(continued on next page)







**Left:** Dr. Clark and a student catch a Moses Sole. There is something in the milky white liquid the fish gives off that sharks don't like. Dr. Clark hopes to find out what it is.

**Below:** Back in the lab, Eugenie takes a closer look at the fish. She thinks that someday swimmers will be able to spray its anti-shark ingredient on themselves.

Today, Dr. Clark does research in museums and laboratories all over the world. When she is at home, she does most of her work at the Smithsonian Institution in Washington, D.C. She is lucky that she can work there. "The Smithsonian has the largest fish collection in the whole world," Dr. Clark says.

Even Dr. Clark's kids got into the act. They are grown up now. But only a few years after they had learned to walk, they were diving with their mother.

### **A Shark for a Pet**

When she wants to study a shark carefully, Dr. Clark may catch one and put it in a big outdoor tank. She feeds it and watches it grow, have baby sharks, and die. By doing this, she learns about the shark's behavior. "We found out that sharks are smarter than people thought they were," says Eugenie. "We even trained one to ring a bell when it wanted food."

When Dr. Clark talks about sharks, she uses words like "beautiful" and "thrilling." But doesn't she think they're a little frightening? "I'm safer diving in the water with sharks than I am getting in my car and going to work," she says. "Millions of people are hurt in car accidents. But they don't get the attention one guy gets if he's bitten on the toe by a shark."

In fact, Dr. Clark would like to spend more time in the water when sharks are around.



"Most of the time, sharks are afraid when they see you in the water. They act a little nervous. You know pretty soon you're going to lose them," she says sadly. "It's like seeing a beautiful deer in the forest. You stay as quiet as possible so you can get a good look. But you know it has already perked up its ears and caught your scent. You know that at the slightest movement, it's going to go away."



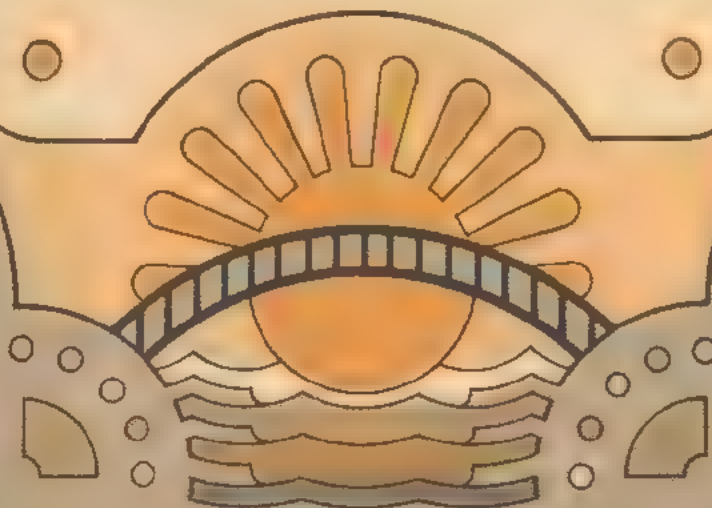


# HELLO SUMMER

Summer. This year it starts on June 20, the longest day and shortest night of the year. It ends 93 days and 15 hours later, on September 22.

What makes those the hottest days of the year? The North Pole! Well, sort of. During the summer it is tilted toward the sun. The northern half of the earth gets a lot of sunlight and heat. While we're sweating it out, places south of the equator, like Australia, are having winter.

To help you get through those hot summer days, we've got amazing experiments, cool recipes and fun things to do. So what are you waiting for? Turn the page!





# Outdoors

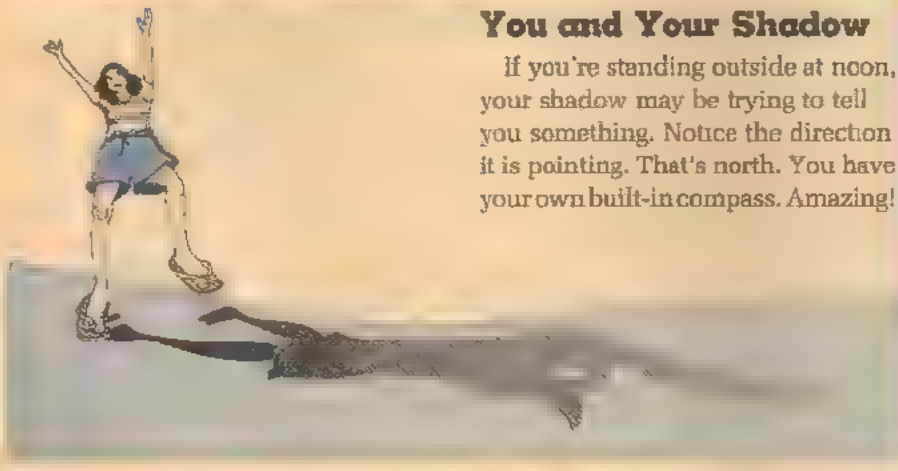
by Jonathan Schwartz



## In a Flash

You can tell how far away a thunderstorm is. When you see a flash of lightning, start counting, "one mississippi, two mississippi," and so on until you hear thunder. Five mississippi's means the storm is a mile

away. Ten of them means it's two miles away. And if you barely get that first mississippi out before you hear thunder, the storm is too close for comfort. Head for cover!



## You and Your Shadow

If you're standing outside at noon, your shadow may be trying to tell you something. Notice the direction it is pointing. That's north. You have your own built-in compass. Amazing!

## Me Tarzan, You Potato

Tarzan always has a vine at his fingertips. You can, too. All you need are a sweet potato, some sand and water.

The next time you have sweet potatoes, save a piece of a raw one (You can use a regular potato, but a sweet one works better.) Make sure it has at least one "eye." The eye is a funny-looking, ugly round spot on the potato. It's where your vine

will grow.

Plant your potato piece in the damp sand. Make sure the eye is above the sand. Cover it and put it in a dark spot. When it sprouts, remove the cover and put the potato in the sun.

When leaves grow on the vine, plant the potato in soil. Have a swingin' time, all you Tarzans out there!





## Walk a Straight Line

In the woods it's okay to talk in circles and to think in circles, but you don't want to walk in circles. There's a secret to walking a straight line in the woods.



Point yourself towards home. Look ahead and pick two landmarks, like trees or rocks. Make sure they are in a straight line with the direction you're heading. When you reach the first landmark, line up another tree or rock with the second landmark. Keep doing this and you'll be easin' on down the road to home.

## Tree-mendous!

If spider web prints are too gross, don't worry. You can do some pretty nice things with leaf prints, too.

What You Need

leaves                      paintbrush  
colored paints          paper

1. First draw a tree trunk on a giant-size piece of paper.
2. Cover the underside of a leaf with a thin coat of paint. Place it paint down near one of your tree's branches.
3. Put another piece of paper on top of it. Press down on it.
4. Lift the paper and the leaf. Would you be-leaf it? Your tree is growing. If the leaf doesn't come out too well, try thinning the paint a little.
5. Hang more leaves on your tree. Try using different color paints. Or make a scrapbook with every kind of leaf that grows near you.

## Your Friendly Neighborhood Spider Web

Spiders...YUCK! They're so creepy and crawly it's hard to believe they spin such beautiful webs. And it's too bad those webs don't last. Here's a way you can make a spider web last a long time.

You will need black paper, white spray paint and clear plastic wrap. Find a web you think is worth saving. Spray it with white paint. Careful! Don't get the paint on someone's

house or car.

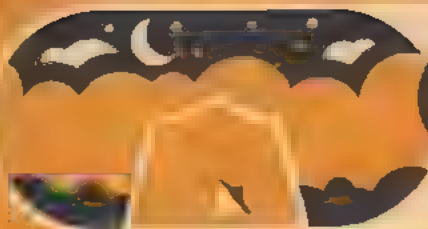
Put the black paper behind the web and slowly pull it towards you. (Don't worry if you have to break a few threads.) The sticky stuff on the web will help it stick to the paper.

Now very carefully cover the paper with some plastic wrap and tape the sides down. After a few tries, you'll have a pretty web almost every time.



David Fehland





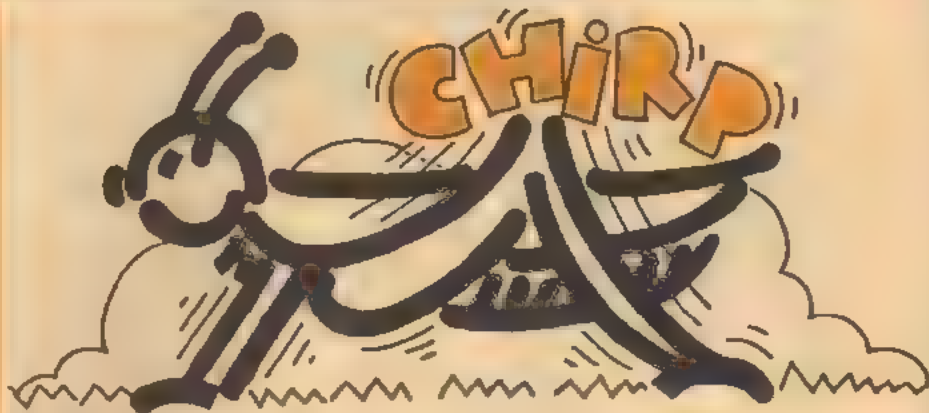
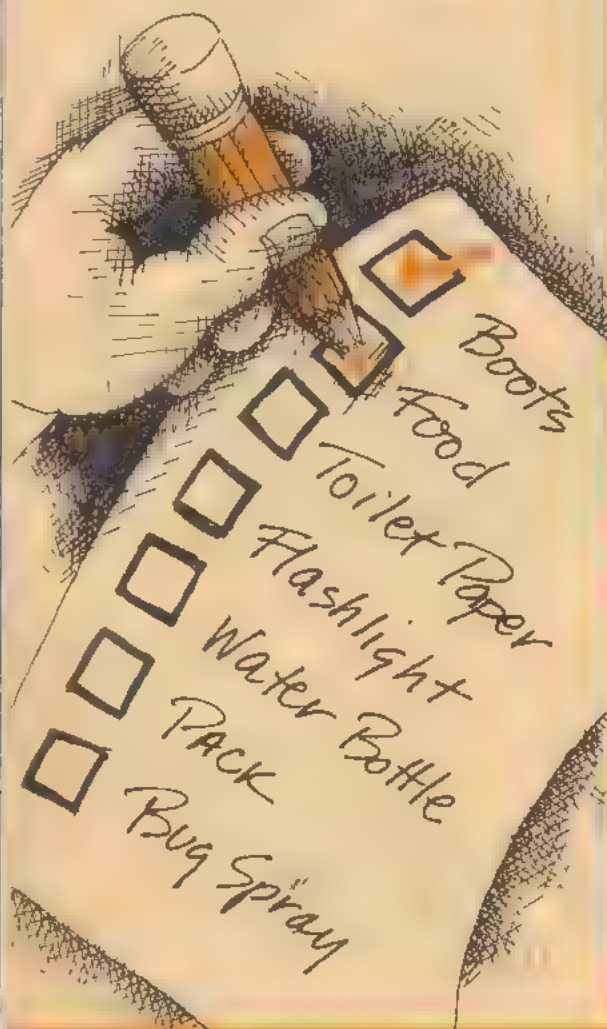
# Camping Out

by Jonathan Schwartz

## Camping Checklist

Go camping without a sleeping bag? Never! It's pretty easy to remember the basics for camping. But these things are just as important to bring along.

1. A pair of comfortable boots. If it rains, they'll be real foot savers.
2. Food you don't have to cook. Like dried fruits and cereal. No one wants to cook in a thunder storm.
3. Toilet paper.
4. A flashlight with fresh batteries.
5. A filled water bottle or canteen.
6. A pack to put all this in.
7. And of course, don't forget the bug spray.



## Cricket Thermometer

Are crickets keeping you awake at night? Maybe not, but they're definitely telling you the temperature. That's right! The hotter it is, the faster crickets chirp. You can figure out the temperature in Fahrenheit degrees.

First listen for the loudest cricket. Count the number of chirps it makes in one minute. Divide by 4. Now add 40. The number you are left with is very close to the temperature outside. So the next time you can't sleep, don't count sheep, count chirps.



## Walking Energy

Taking a hike means burning calories. And that means getting hungry. Too hungry to wait until you get back to camp or home. So bring along a high-energy snack to eat while you walk. Here's what to include: **Peanuts:** Use the salted kind. You lose a lot of salt when you sweat.

**Chocolate:** M&Ms are great because they won't melt. And the sugar has loads of energy.

**Dried Fruit:** Apples, raisins, apricots, pineapple, anything you like. Dried fruit last a long time.

Mix all the ingredients together. Put them in a plastic bag. Keep it handy in your pocket.

P.S. Eating means getting thirsty. Don't forget to bring along some water.





## Pick a Campsite

When was the last time a branch dropped in on you in the middle of the night? If you camp under a tree, it could happen.

A tree can also be a real drip. If it rains, the branches may protect you at first, but they will shed water on you for hours later.

So look for a clear area to pitch your tent. If it slopes gently, rain won't collect where you sleep.

Choose a site where trees are to your west. They'll protect you from the wind. And you'll be warned by the morning sun which rises in the east.

## First Aid Kit

What's worse than getting cut on a camping trip? Not having a bandaid to put on it. To keep this from happening to you, bring along a first aid kit. You can make one yourself.

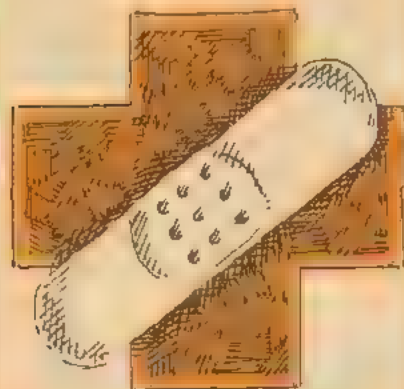
Get a small box. Fill it with things that might come in handy. Here are some things you can put in for starters:

Bandaids

Gauze

Towelettes to clean cuts.

A small tube of first aid cream for cuts and burns



## Rain, Bugs, Cows

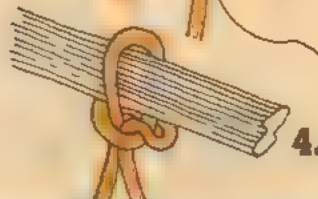
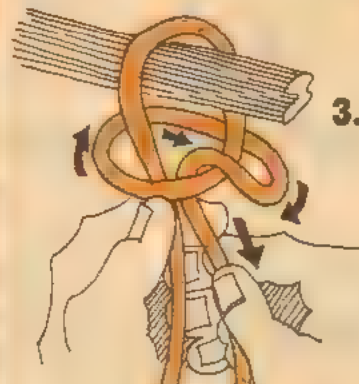
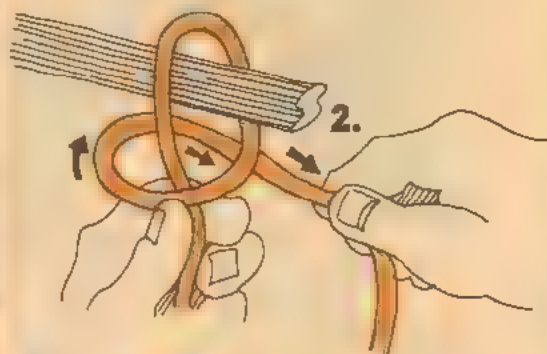
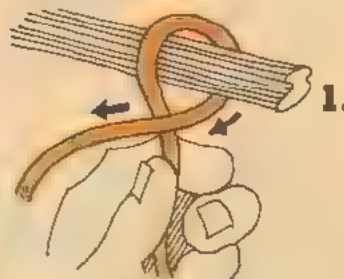
You can predict rain by watching how animals behave. When rain is coming, the air pressure drops. This makes it hard for bugs and birds to fly, so they fly lower. Low-flying insects bother cows. They sit down to avoid the little buggers. So if cows are sitting down, it means rain is on the way. Got it?

## Knots to You

"Tie up that sleeping bag!" No problem for you. Because you'll know how to make a slipknot. It's great for tying a rolled-up sleeping bag or even a package.

1. Throw the string or rope in a large loop over what you're tying.
2. Bring the free end behind the loop.
3. Put the free end through the little hole and pull tight.
4. Practice your knot before you go camping.

You can make the loop tighter or looser just by pulling. Why not slip one on for size?





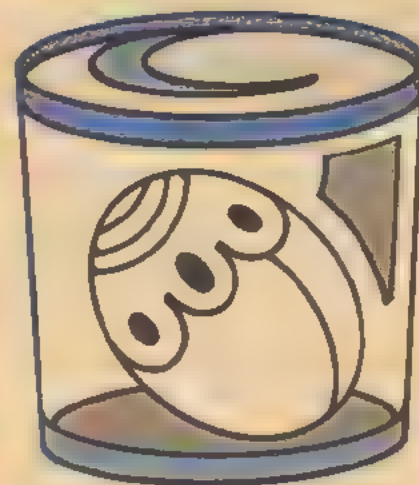
# At the Water

by Megan Stine & H. William Stine

## A Stroke of Genius

Tired of watching show-off swimmers cut through the water doing a scissor stroke? Is their frog kick about to make you croak? Why not fight back with some fancy foot-work of your own? If you're an expert swimmer, invent a brand-new-never-seen-before swimming stroke!

How about a "submarine stroke" — three strokes above water, then "take 'er down" for three strokes below? Or what do you think of the "bird-bath" stroke where you dip your head quickly in and out of the water like a bird drinking? Or just invent something crazy and name it after you! And keep on stroking!



## Why You Float

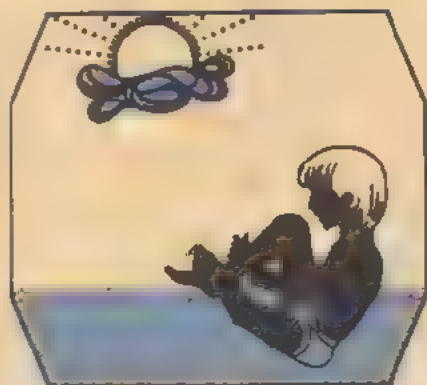
Gently drop an egg in a glass of water. It sinks to the bottom, right? Now add salt to the glass. Hey, the egg floats! That's because the salt makes the water more dense, more tightly packed, than before. Now it can hold up the egg.

The same thing happens when you go swimming. You are less dense than the water. And your air-filled lungs act like built-in life jackets. You float even better in the ocean, which is full of salt, than in a lake or pool. So it's easy to avoid that sinking feeling in the summer!

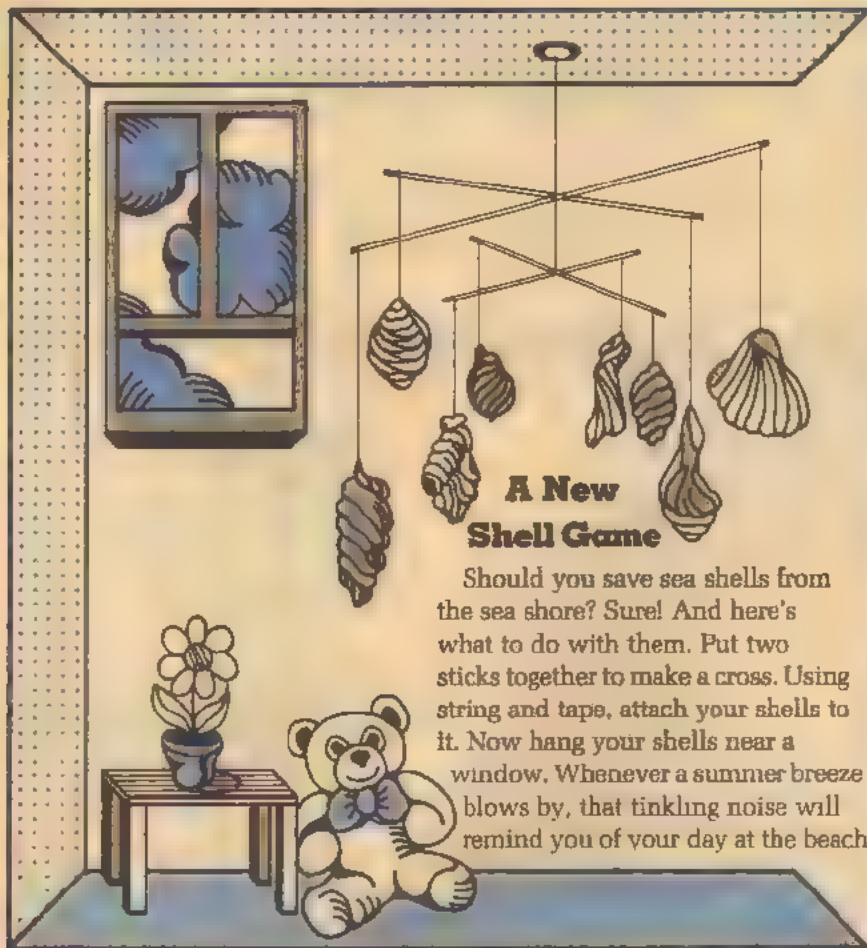
## Cramping Your Style

Hot flash! You can get too much of a good thing. Take swimming, for instance. If you overdo it and swim too long when you're not in shape, you can get muscle cramps—especially in cold water. And they smart! But you can outsmart them. Don't panic. Just massage the cramp, and then swim ashore.

Keeping yourself dry and warm out of the water will help keep away cramps when you aren't swimming.







### A New Shell Game

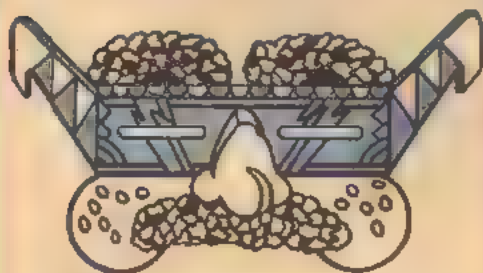
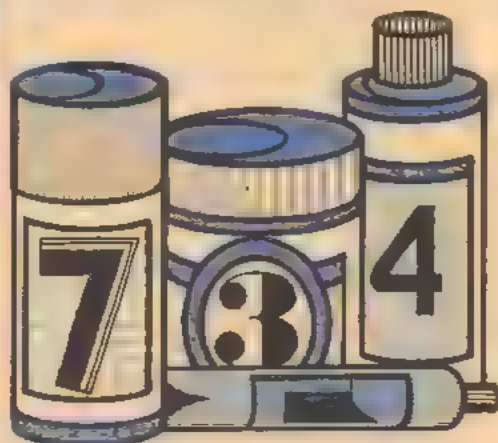
Should you save sea shells from the sea shore? Sure! And here's what to do with them. Put two sticks together to make a cross. Using string and tape, attach your shells to it. Now hang your shells near a window. Whenever a summer breeze blows by, that tinkling noise will remind you of your day at the beach.

### 3-2-1 SUNBURN

If you count to eight, you can skip your yearly summer sunburn. Suntan lotion manufacturers put a number on the label. It tells you how much protection their lotion gives you.

Two means you will be twice as protected as if you wore no lotion at all. Three is three times as much, and so on all the way up to eight.

So check it out. But be sure to use something if your skin tends to burn. Water and sand act like mirrors. And if the sun doesn't get you, the reflection will!



### Polar Eyes

Tired of squinting in the bright sunlight? Try a pair of sunglasses.

Sunglasses block out the light according to color. A pair of green "shades" only lets green light reach your eyes. And if your shades are polarized, they work even better. With these only some of the green light will reach your eyes!

You can make your own sunglasses. Make glasses out of cardboard. Cut narrow slits for your eyes and put your glasses on. They may look ridiculous, but they work!

### Skip It

Everyone else can do it but you, right? Well, relax—because 3-2-1 CONTACT is going to teach you, right here, right now, how to skip rocks across a lake.

First, you have to find the right rock. The best ones are thin, flat rocks about two inches long. Hold the rock between your fingers and thumb so that it's parallel to the ground.

Turn your body sideways to the lake. Bend down a little, and now, flick! the rock with a snap of your wrist. It's all in the wrist, take our word. And if you did it right, the rock will sail out across the water. Then it will skip in, and come out again. And again and again and again and...aw, just skip it!







# Keep Cool

by Megan Stine & H. William Stine



## Clouding a Burning Issue

Quick! True or false? You don't have to worry about getting sun-burned on an overcast day.

That's false. And here's the proof. On the first overcast day, write your initials on your arm with adhesive tape. Wear it for the whole day. You know what happens when you do this on a sunny day. But what about a cloudy one? You may be in for a surprise.

Clouds block the sun's light. But they don't block out all the sun's ultra-violet rays. These are the rays that fry you. So be careful! If not you'll end up with a sun . . . er, cloud burn



## You're Getting Colder

You can't get your house or apartment as cool as an igloo. But here are some tips that will keep the temperature down.

1. Close the shades, for openers. When you keep out the sunlight, you keep out some heat, too.
2. Turn off a few lights. Light bulbs

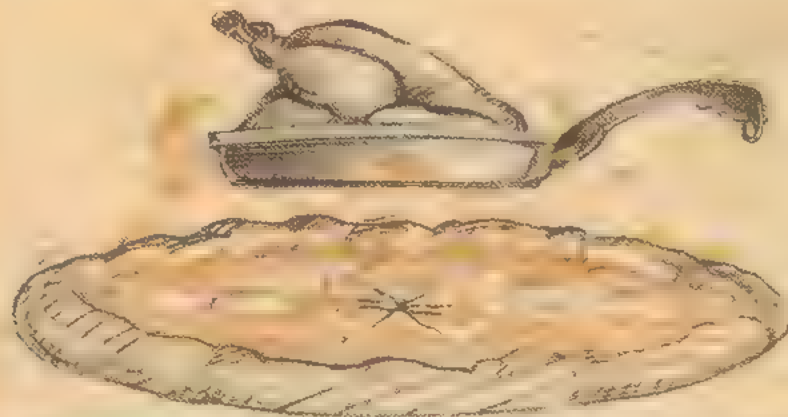
give off heat as well as light.

3. Stay on the west side of the house in the morning. Stay in the east side of the house in the afternoon. That way, you'll avoid the sun.

4. Play the radio instead of the TV. (How many times are you gonna sit through the same *I Love Lucy* any-

way?) TV's give off a lot more heat than radios do . . . especially older sets.

5. Heat rises, so come downstairs. Or sit on the floor! And if you live in a house with a basement, then you've got it made in the shade. That's the coolest place of all.



## A Hot Tip

Don't eat spicy foods on a hot day unless you want to feel hotter! Pizzas, tacos, and other spicy foods make you perspire. And if it's humid outside, the extra sweat will make you feel like a soggy blanket that's been left in the car for a week!

Besides—do you know how hot you have to make the oven to cook a pizza? And then the kitchen gets hot, and then you get hot, and then . . . Forget it! Just thinking about it makes our brains burn!



## Home, Home on the Tennis Court

What do Jimmy Connors and Annie Oakley have in common? They both sometimes wear kerchiefs around their necks on hot days.

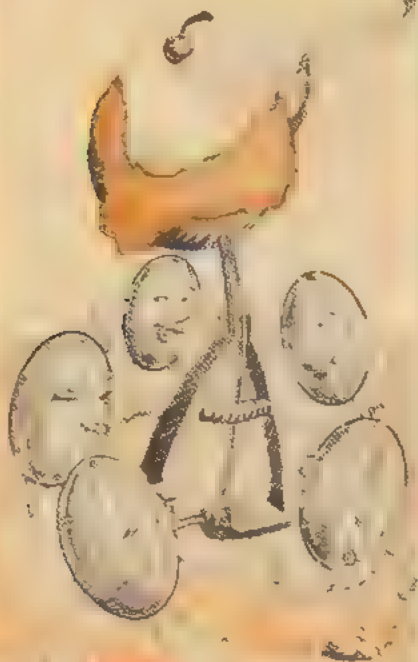
Jimmy and Annie know that it's sometimes cooler to wear more clothes, not less. Here's why. When you sweat, the water evaporates and it cools your body. But when you sweat a lot, the air can't absorb the perspiration fast enough. Especially on a really humid day, when the air has a lot of water in it. Being sweaty makes you feel hot. But a neckerchief soaks it up and cools you off. Tennis, anyone?



## Watermelon Ices

A summer without watermelon is the pits. Here's a great recipe to try.

1. Cut up a few slices of cold watermelon into small chunks. Don't forget to take out the seeds.
2. Blend the chunks or mash them until they look like baby food.
3. Freeze the whole thing for about two hours. You can even mix in some whipped cream before popping it into the freezer.
4. Scoop out some icy watermelon. Top it off with whipped cream and start eating!



## Salt Talk

Lick your arm. Not now, silly! Next time you're active and all worked up. Your arm will probably taste salty, because you lose salt when you perspire. So if you've exercised a lot, get yourself a drink of water and a pretzel, please. Without the salt, your body may conk out on you. Besides, we told you not to eat pizza and tacos. At least we left you one good food.

## Join the Fan Club

1. Fold a piece of paper back and forth.
2. Fold it in half and staple both ends.
3. Attach a stick with tape or glue.

Keep it moving. What? The air, of course! Nothing brings in a breath of fresh air like a fan. Pleated paper fans may be the easiest things to make since sliced bread, but that's O.K. After all, they work. And your fan will really be fan-tastic if you decorate the paper first. Use glitter, ribbons, photos or even jokes. Now you're all set. Happy fanning!

1.

2.

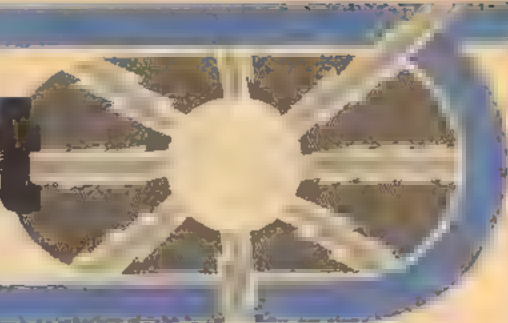
3.

Dan

Fernand



# Experiment



## Sun Power

As oil and gas get harder to find, people will have to depend on other things for energy. One source is the sun. Scientists know how to make a simple device to trap energy from the sun. You can make one, too.

### What You Need

Two aluminum pans (the kind you throw away)  
Black or very dark paint (the kind that does not come off with water)

Plastic food wrap      Water  
Outdoor thermometer      Newspaper

Water pitcher

### What You Do

1. Paint the inside of one of your pans black. Let it dry.
2. Fill a pitcher with cool water.
3. Put your pans on a sheet of newspaper outdoors in bright sunlight. Late morning is a good time to start.
4. Fill both pans with water from the pitcher.
5. If you have a thermometer take the temperature of each pan and write it down.
6. Cover the black pan with a sheet of plastic wrap. Pull it tight and tape it in place.
7. Come back after both pans have been in the sun for four hours. Check the water temperatures with a thermometer or by putting a finger in each pan. Which pan is hotter?

### Why It Works

The sun warms everything, but dark things hold heat better than light ones do. A lot of light hits your shiny pan and is reflected back out again. That way, great heat does not build up. In the dark pan the opposite happens. Light passes through the clear plastic but the black coating absorbs it. It is

then changed into heat. Heat can't go through plastic as easily as light can, so most gets trapped in the pan. The water in this pan gets much hotter.

This is called the *greenhouse effect*. It explains how the earth stays warm. The atmosphere lets in sunlight, but it traps heat near earth's surface.

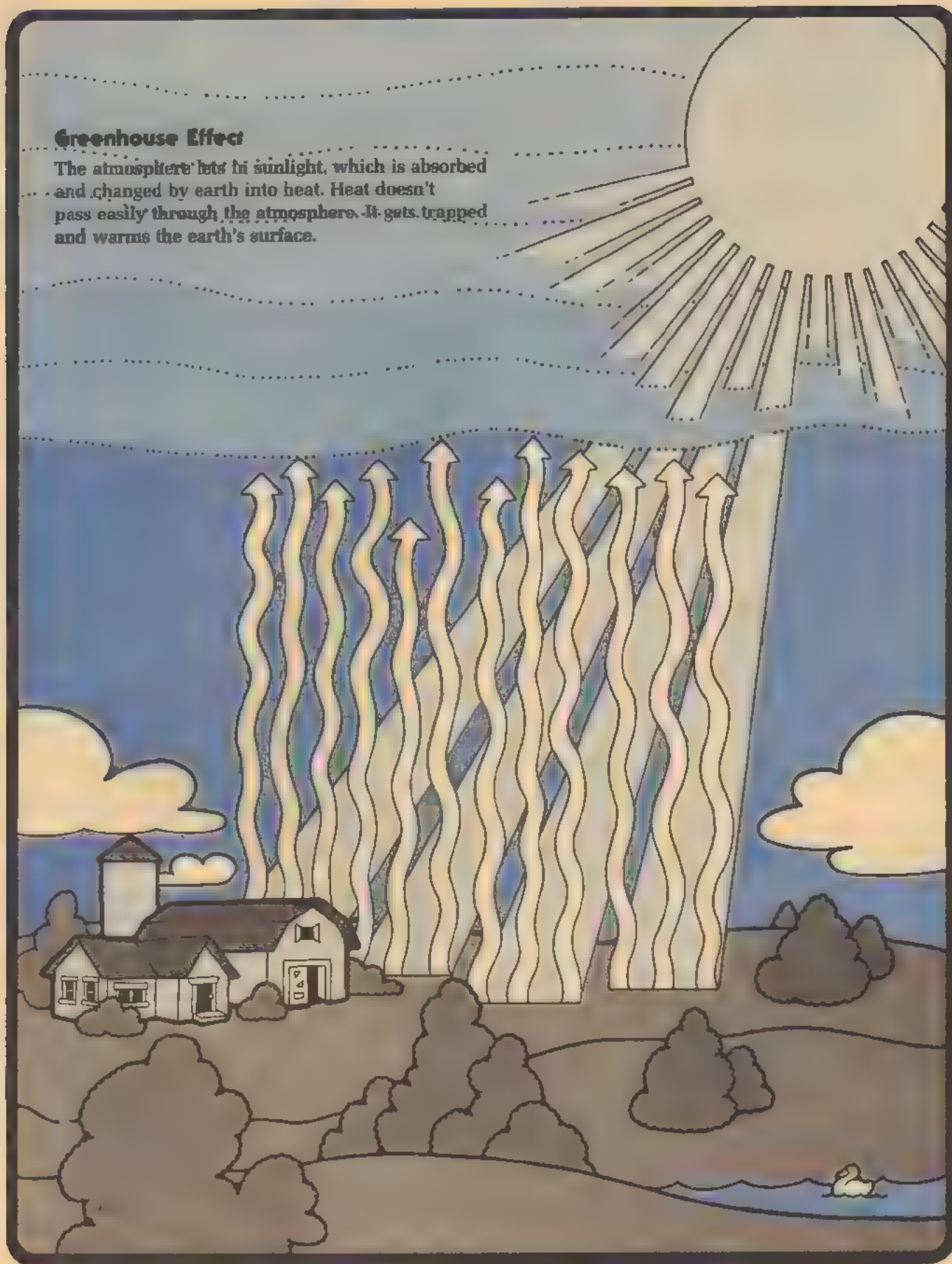
This principle is used in solar hot water heaters. These heaters are black boxes with glass covers. Pipes with water run through them. On a roof, the sun's rays heat the black container. This heat warms the water in the pipes. It's the same way you trapped heat from the sun to warm water in your pan.





### Greenhouse Effect

The atmosphere lets in sunlight, which is absorbed and changed by earth into heat. Heat doesn't pass easily through the atmosphere. It gets trapped and warms the earth's surface.







# Reviews & Previews

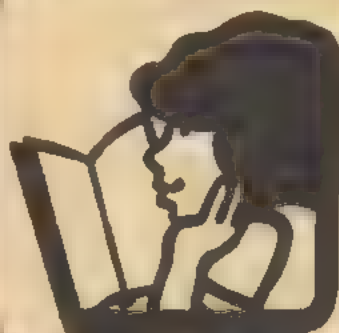
Here are some books to read and things to do and see for even more fun this summer!

**Water** In Norman Anderson's *Investigating Science in the Swimming Pool and Ocean*, you can learn everything from what creates waves to how divers breathe underwater. It's full of things to do at the beach, in a lake or swimming pool, or in your sink or bathtub at home. The book, published by McGraw Hill, is written for older kids. You can find it in a library or bookstore.



**Book**

**Sunbeams** The sun can do more than give you a tan. *Catch a Sunbeam* by Florence Adams takes you on a journey through time to discover how scientists first learned about the sun. In this book, you'll also find out how you can use the sun to do things like tell time, heat a room, or cook yourself a hot dog. Harcourt, Brace, Jovanovich publishes it, and you can find it in your library or bookstore.



**Book**

**Sand Castles** Next time you go to the beach, try making an alligator or whale—or perhaps a pyramid or two. Bob and Pat Reed's book *Sand Creatures and Castles* will show you how. It's full of pictures and step-by-step directions on how to make all sorts of animals and things out of sand. The book is published by Charles Scribner's Sons. Look for it at a library or bookstore.

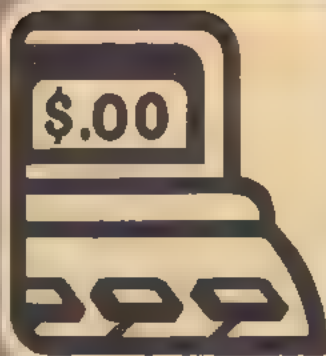


**Book**



**Forest Ranger** You can help prevent forest fires by dousing your campfires with water and dirt. Better still, why not become a Junior Forest Ranger? Just send a postcard with your name and address to:

Smokey Bear Headquarters  
Washington, D.C. 20252  
Ask for a Junior Forest Ranger Kit. You'll get more information, plus a badge and a certificate.

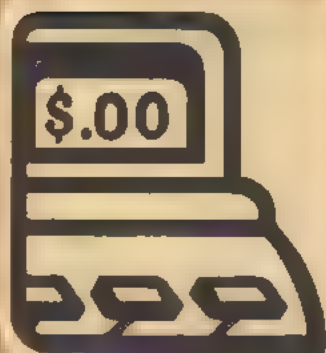


**Something Free**

**Submarine** The Museum of Science and Industry is one of the largest in the world. One of the exhibits is a German submarine captured during World War II.

An American ship spotted it sinking. The captain sent men aboard the sub. It was abandoned. The Americans hooked it up to their ship. On the way to shore, it almost sank twice.

*(continued below)*



**Something Free**

**Ice Cream** A king of England once beheaded his cook for revealing the secret recipe of ice cream. Find out more chilling facts in "The History of Ice Cream." Ask for it on a postcard with your name and address.

Write to:

International Assn. of  
Ice Cream Manufacturers  
910 17th St., NW  
Washington, D.C. 20006



**Museum**

At the museum you may walk through the sub. The museum has other attractions such as a coal mine and a fairy castle.

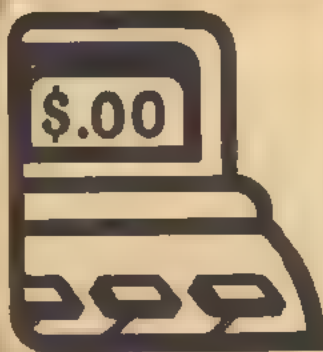
This museum is in Chicago. If you can't get to it, why not visit one closer to home? Write a story about it and send it to us. Send it to:

3-2-1 CONTACT  
P.O. Box 599  
Ridgefield, NJ 07657

*This review sent in by Scott Hughes, Palatine, Illinois.*

**Birds** Can you tell a sparrow from a wren? You could if you send for "Bird-watching." After reading this booklet, you'll know where to look for different birds and how to keep track of them. Send a postcard with your name and address to:

The National Wildlife  
Federation  
1412 16th St., NW  
Washington, D.C. 20036



**Something Free**

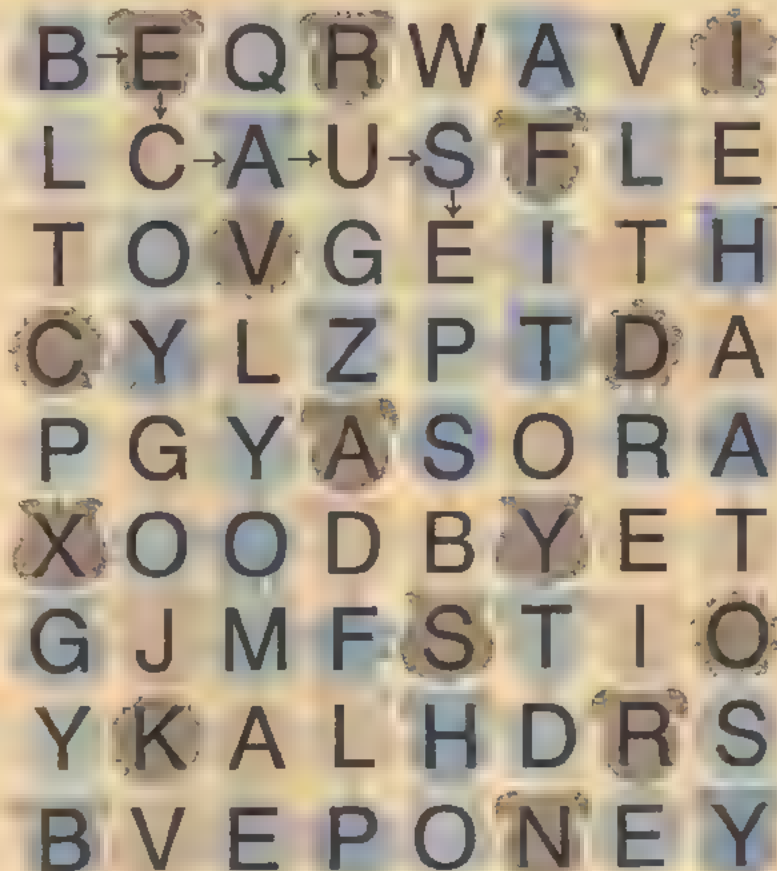


# Puzzles



## 1. Why was the bee sad?

To solve this riddle, lead the bee to its hive. We've shown you the first word on the sentence path. Finish drawing the line to the Y near the hive. Pass only through the letters which spell out words in the riddle's answer. Move across and down. You can move backwards and forwards, but not diagonally. Now get that bee buzzing!



## 2. What is a spook's favorite ride?

To answer this riddle decode the letters on the left.

What you do:

1. Count ahead five letters from the first T. We've written the T and H for you already in the answer space.
2. Now count back three letters from the first H. Write the third letter in the answer space below.
3. Keep counting five ahead and three back until you have the spook-y answer.

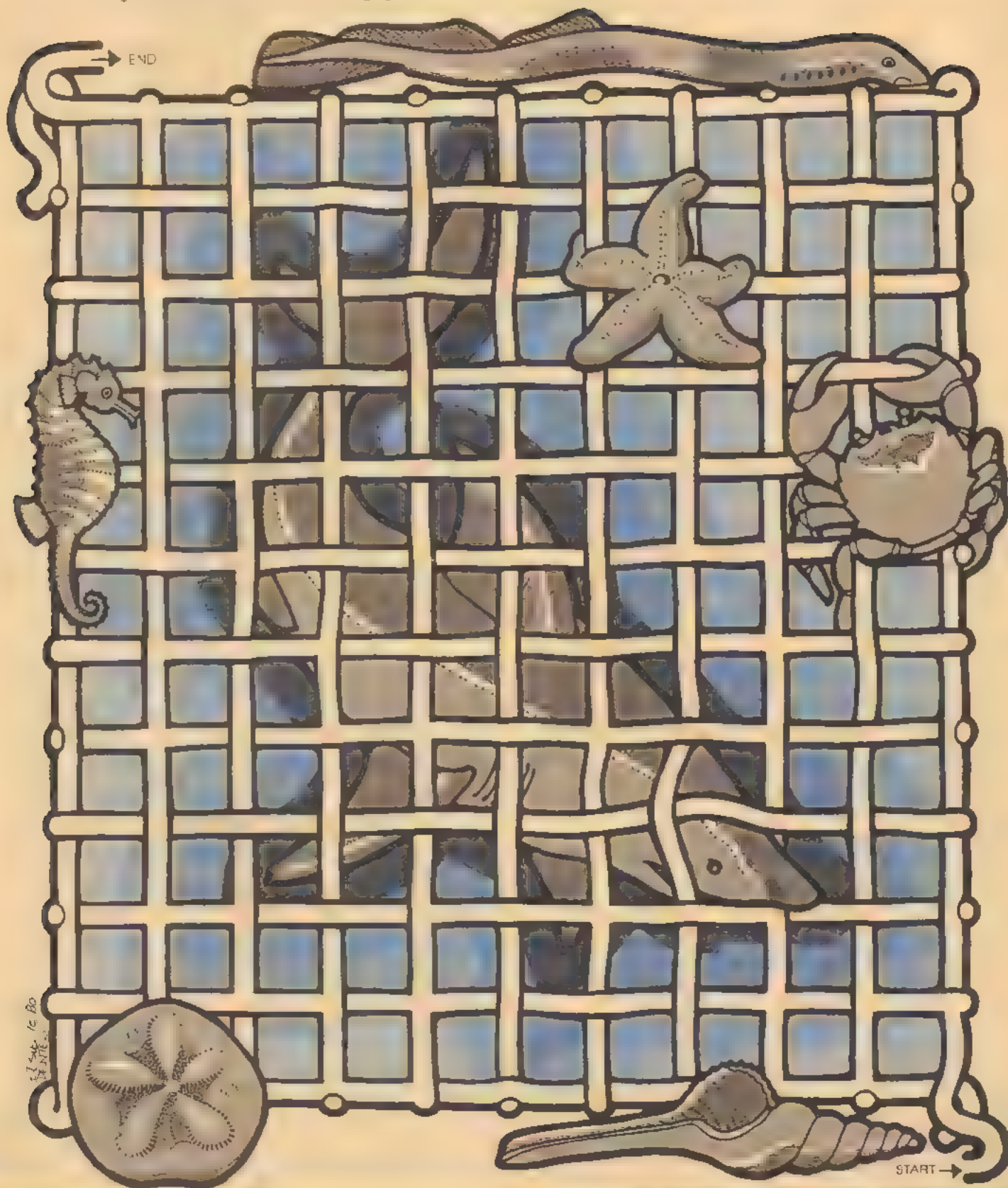
Answers on page 46





# Shark Maze

This shark is pretty tough. But it can't get through the net. You can! Starting on the bottom, work your way past the fierce fish to the top of the net. Answer on page 46





# Jigsaw Shapes

There's more to the designs on these pages than meets the eye. Each puzzle is sort of like a jigsaw. These pieces will fit together no matter where you put them. But you have to fit them so that they make two things that are lots of fun during the summer.

**1. Left** This picture is really EIGHT triangles. Cut out each one. Arrange the pieces so that they are the same shape as the sketch. Happy Sailing!



**2. Above** This time you have to figure out the shape yourself. Cut out each piece. Arrange them into a picture of something you know. Hint: These are flown in the summer. Answers on page 46





# Pocket Zoo

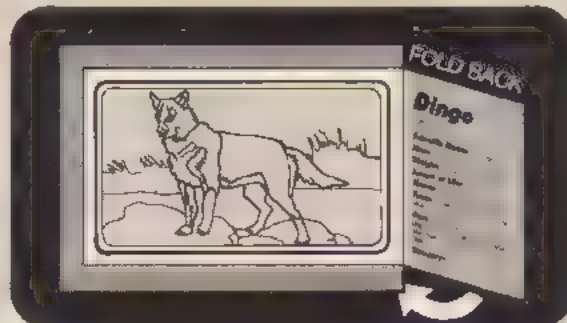
## Animals of the Everglades

This month, your animals make their home in the Everglades. Located at the southern tip of Florida, the Everglades are known as the "river of grass." They are 60 miles wide and 100 miles long, about the size of Connecticut. The Everglades are mostly swamps and marshes. But there are also islands of trees, and plains covered with tall grass. The animals of the Everglades depend on their wet surroundings. Without all that water, most of them couldn't survive.

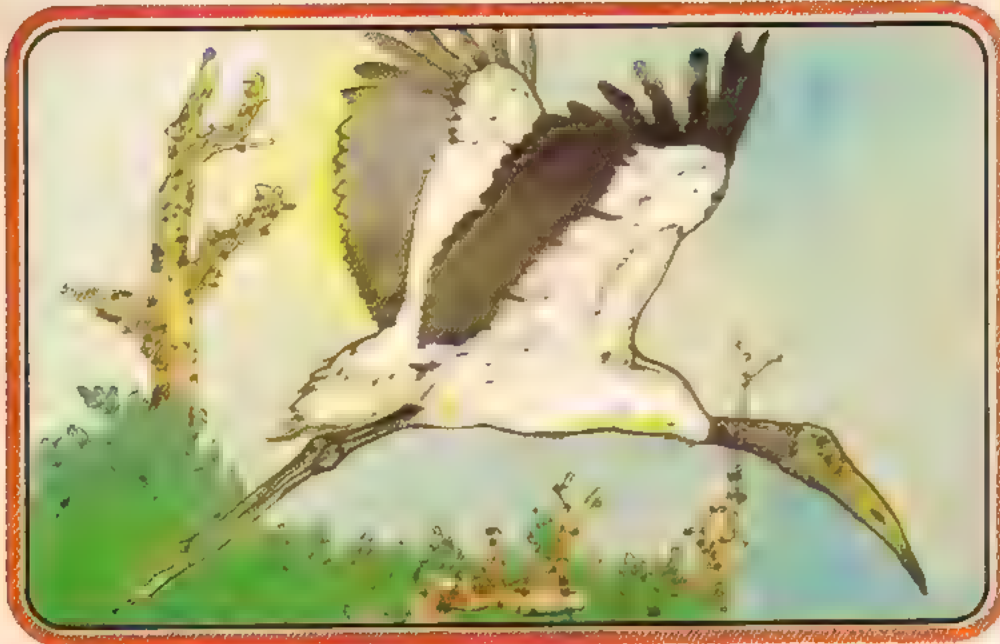
### How to Make Your Pocket Zoo

To make your animal cards, you need scissors, 4"x6" index cards (or pieces of cardboard the same size) and some sticky stuff.

1. Cut out your six animal cards along the dotted lines.
2. Paste or tape the animal to one side of the index card. Do this so that the information about the animal hangs over the side. (picture below)
3. Now fold the flap with the information so that it is on the back of the card. Glue this side, too.
4. Use the extra space on the back for anything else you might want to write about each animal. Your pocket zoo is ready.







## American Wood Stork

**Category:** Bird

**Size:** Up to 4 feet (1.2 m) long, with a 5½ foot (1.6 m) wingspan

**Weight:** 5 to 10 pounds (2.2-4.5 kg)

**Length of Life:** 20 to 30 years.

**Home:** Nests in huge colonies with as many as 15,000 birds

**Food:** Fish

**Fact:** Its bare head has earned its nicknames like "leatherhead" and "flathead."

**Scientific Name:** *Mycteria americana*



## Eastern Diamond-back Rattlesnake

**Category:** Reptile

**Size:** 3 to 6 feet (1-1.8 m) long.

**Weight:** Up to 25 pounds (11 kg).

**Length of Life:** 15 to 20 years

**Home:** During the summer, it lives on the plains, sometimes going into the water. In winter, it hibernates in thickets and swamps.

**Food:** Rabbits, rodents, birds.

**Fact:** It uses its rattle to frighten its enemies. The largest rattlesnake, the diamondback's rattle can be heard 100 feet away.

**Scientific Name:** *Crotalus adamanteus*



## Mountain Lion

**Category:** Cat

**Size:** About 6½ feet (2 m) long; almost half that is its tail.

**Weight:** From 80 to 200 pounds (36-90 kg).

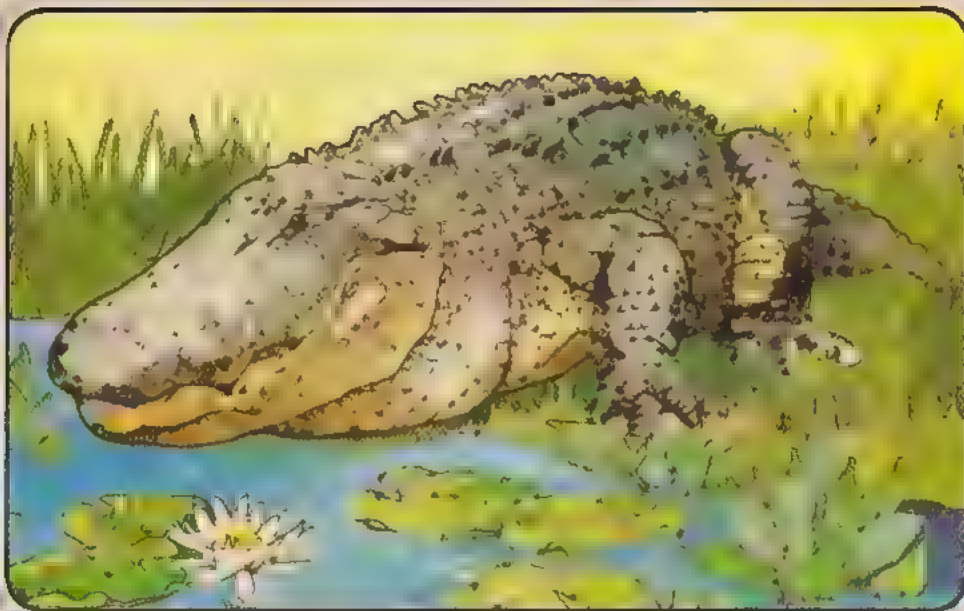
**Length of Life:** Up to 18 years in captivity

**Home:** It lives in dens hidden in swamps and forests

**Food:** Deer, rabbits, rodents, some cattle.

**Fact:** It is also known as the panther, puma and cougar. Though it lives on the ground, it climbs trees to escape danger.

**Scientific Name:** *Felis concolor*



## American Alligator

**Category:** Reptile

**Size:** From 6 to 16 feet (1.8-5 m) long.

**Weight:** 300 to 400 pounds (140-180 kg).

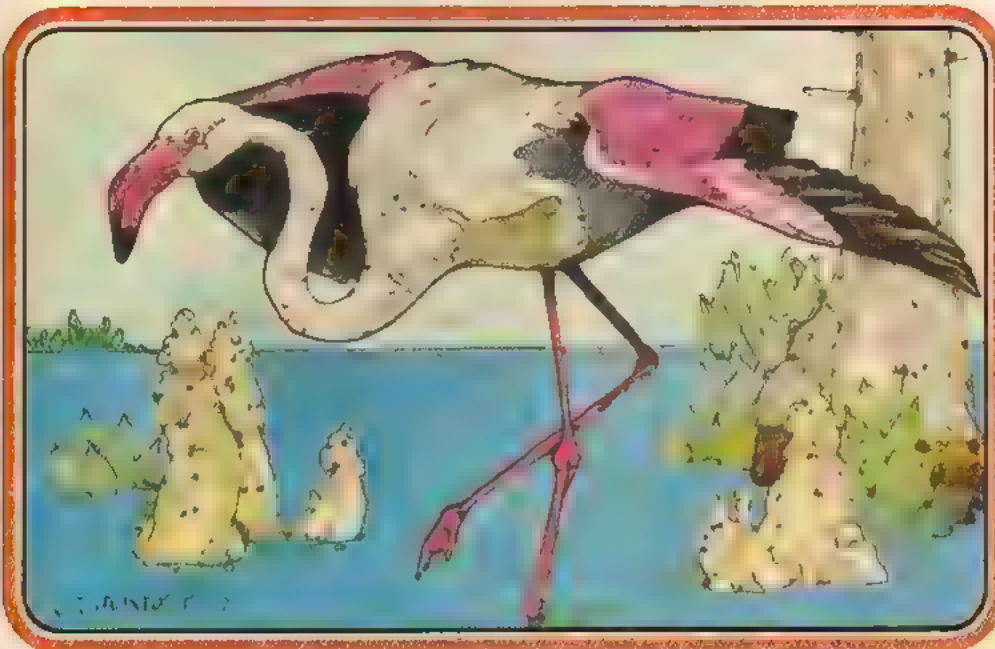
**Length of Life:** Up to 70 years.

**Home:** It lives in burrows, dens or holes in the banks of rivers. There it's cool in summer and warm in winter.

**Food:** Insects, shellfish, fish, snakes, birds, frogs and muskrats.

**Fact:** An alligator sweats through its mouth. When it opens its jaws wide, the moisture in its mouth evaporates and cools it off.

**Scientific Name:** *Alligator mississippiensis*



## Flamingo (Fluh-MING-oh)

**Category:** Bird

**Size:** About 4 feet (1.2 m) tall.

**Weight:** About 5 pounds (2.2 kg).

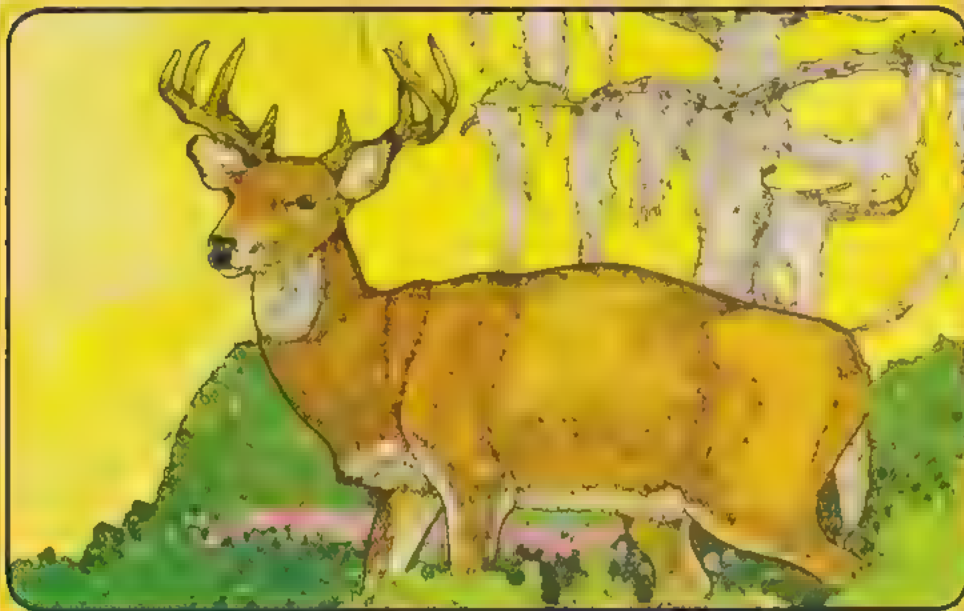
**Length of Life:** As long as 30 years.

**Home:** It lives and feeds in shallow water.

**Food:** All kinds of fish; shellfish are a favorite.

**Fact:** To eat, it hangs its head nearly upside down, with its eyes pointed backward between its legs. Then it scoops up food with its bill.

**Scientific Name:** *Phoenicopterus ruber*



## White-tailed Deer

**Category:** Mammal

**Size:** About 3 feet (1 m) tall. The male's antlers spread 2 feet (.7 m) across.

**Weight:** About 200 pounds (90 kg).

**Length of Life:** Up to 16 years in the wild

**Home:** Swamps and open, brushy

**Food:** Tree bark, twigs and leaves.

**Fact:** When it flees from danger, it flips up its tail, showing the white underside. This serves as a danger warning to other deer.

**Scientific Name:** *Odocoileus virginianus*



# The Lungs

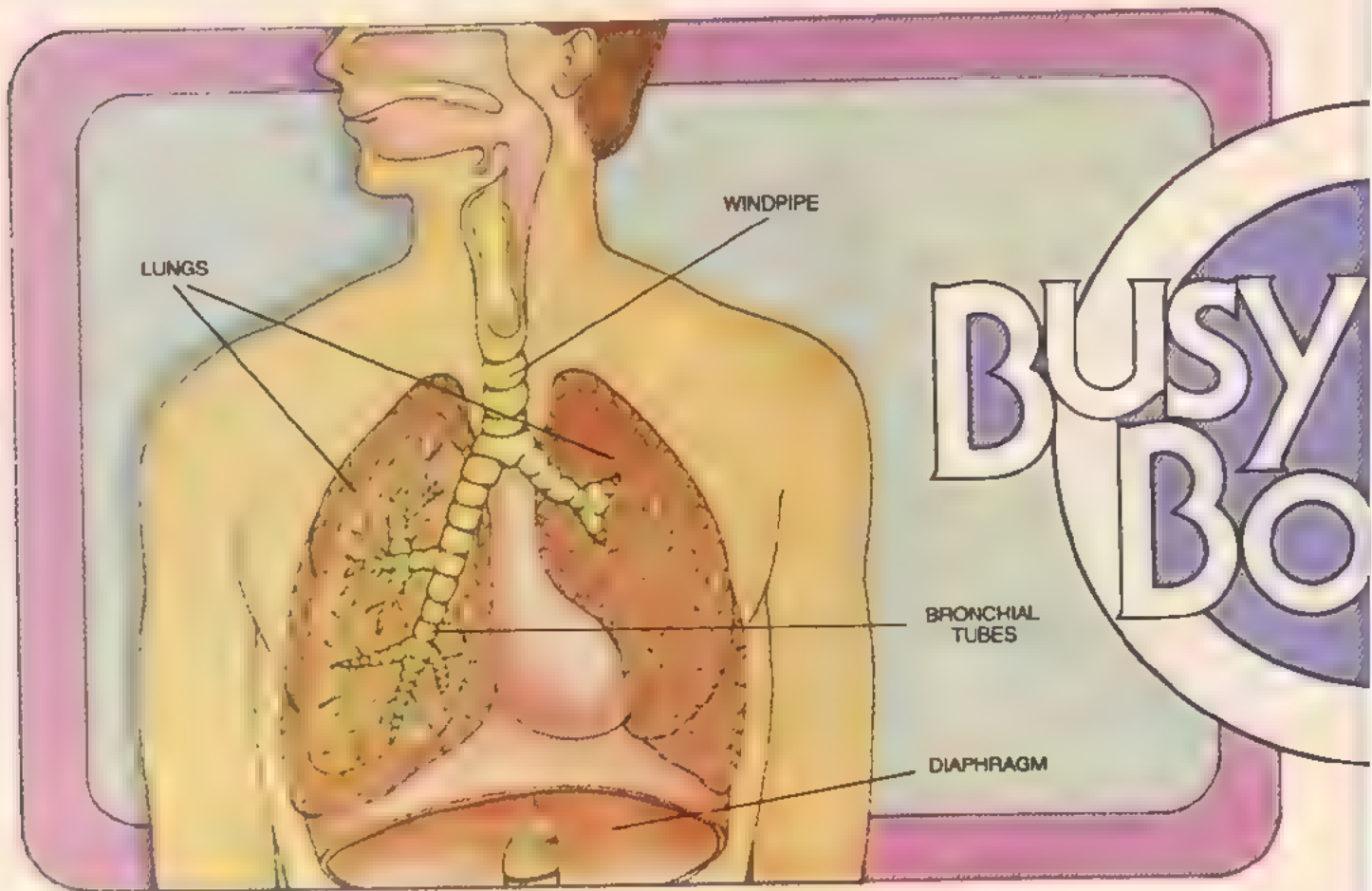
by Megan Strue & H. William Strue

Your lungs are like really thin tissue paper. There's so much of them that if you spread them out flat, they would probably cover your living room floor! But don't worry—that's not the experiment for this month. We have better things for you to do. Read on!

Your nose is the passage that leads to a big tube called the windpipe. Sorry if you get wet on this trip, but the windpipe has to be wet to moisten incoming air. Go down the windpipe five inches and you'll come to a fork in the road. Here the windpipe branches off into two tubes, called bronchial (BRON-key-ull) tubes. One leads to each lung. In the lung, the tubes branch again and again. At the end of each tiny branch, there are little sacs, or pockets.

There are 300 million sacs altogether. When you breathe, the pockets puff up with air.

The weird thing about your lungs is that the



## Move Over, Sweet-Heart

One of the best things about your lungs is that you have two of them. But guess what? They aren't a matched set. Your left lung is smaller than your right. And that leaves a little extra room over there. So what are you going to do with it? Have a heart!

## Free! A Fabulous Trip to Your Lungs!

Since your lungs are on the inside, you don't get much of a chance to see how they look. But imagine you went zooming up your nose.

pockets are tissue-paper thin. But there are so many of them bunched together that one whole lung looks more like a sponge. How big is this "sponge," you ask? Well, it's about two and a half pounds, and up to 12 inches long. And that's it for the fabulous trip to your lungs!

## How It Works

Whether you are breathing normally or sending out an extra-large blast of air, your lungs work the same way. Right under them is a muscle called the diaphragm (DIE-a-gram.) It's like a shelf that sits over your stomach and under your lungs. When the diaphragm muscle moves up,

dies



it pushes air out of your lungs. Then it moves down, and your lungs fill with air again. Ever wonder where hiccups come from? Well, it's not your lungs' fault. It's your diaphragm going nuts!

Your lungs have two jobs to do. They take in oxygen, which your body needs. And they give off carbon dioxide—a gas you have to get rid of. Here's how the lungs do both jobs.

When oxygen comes down your windpipe and into the tiny air sacs, it practically rubs up against your blood! There's a thin wall between the air sacs and the blood vessels. But it's so thin that oxygen can pass through it. And while the oxygen is going into your blood, your blood passes carbon dioxide out. Then you breathe out, take another breath, and the whole thing starts again.

People used to say, "In with the good air, out with the bad air." But carbon dioxide isn't all that bad. For one thing, plants need it to live. And for another, you need a little carbon dioxide yourself. It sends a signal to your brain that passes the message on to your lungs that it's time to breathe again.

## A Breathtaking Quiz

Here's a quiz about breathing. Some of the questions are crazy, so if you don't know the answer don't hold your breath! The answers are on page 39.

- 1.** Some musicians can play a note for an hour without stopping to breathe. TRUE OR FALSE?
- 2.** Babies don't breathe before they're born. TRUE OR FALSE?
- 3.** It's easier to breathe on top of a mountain because the air is so clean. TRUE OR FALSE?
- 4.** Some swimmers can hold their breath for fifteen minutes or more. TRUE OR FALSE?
- 5.** The cigarette smoke that enters a person's lungs has poison in it. TRUE OR FALSE?
- 6.** Deep sea divers have to hold their breath as they come up. TRUE OR FALSE?
- 7.** Too much yawning is bad for you. TRUE OR FALSE?



## Experiment #1: Lung Power!

Has anyone ever told you that you're full of hot air? Well, now you can measure just how much hot air your lungs will hold.

For this experiment you'll need: an empty gallon jug, a plastic tube or a bent flex-straw, a sink, some water, and a friend.

Fill the sink halfway with water. Fill the jug to the top. Now comes the tricky part. Your friend can help you, since the jug will be heavy. Put your hand over the opening of the jug. Turn it upside down. Put the upside-down jug in the sink. Now you can take your hand away. If you have done this right, the water will stay inside the jug.

While your friend holds the jug, slip one end of the tube or straw into the opening. Blow a regular breath into the tube. Your air forces the water out. Draw a line on the jug at the water level. Above the line is how much air you just exhaled.

Repeat the experiment, but next time take as deep a breath as you can. You might even empty the jug! Your lungs can hold more than a gallon of air!

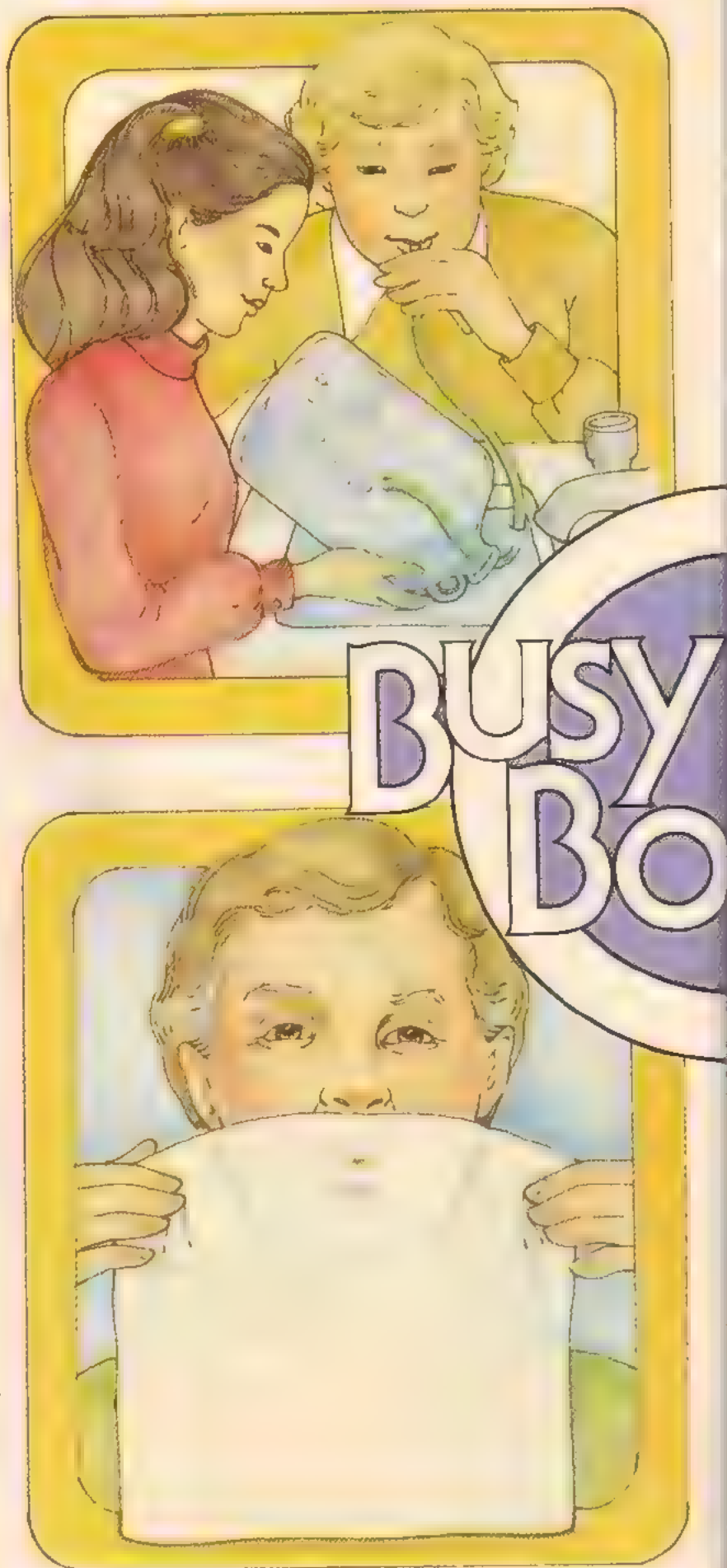
Now let your friend try. How much air does she exhale with a normal breath? With a deep one?

## Experiment #2: Cough It Up!

Here's something quick and disgusting. Know anyone who still smokes? Ask that person to take a puff of a cigarette *without* inhaling it. Instead of inhaling the smoke, have the person blow it in a small, steady stream into a white handkerchief. Take a look at the stain. That's the junk that goes into a smoker's lungs in just one puff.

If you don't believe that the tar stays in the lungs, try this. Have the person inhale the next puff and blow the smoke into a clean part of the handkerchief. The second stain will be much lighter. Where did the junk go?

Now ask the person *not* to repeat the experiment! Get it? Good.



dies

## Quiz Answers

**1. TRUE** At least one musician, Rahsaan Roland Kirk, could play a note for an hour. He did it by breathing in through his nose at the same time he blew out through his mouth. Very few people have ever been able to learn how. Rahsaan's secret died when he died!

**2. TRUE** Babies don't breathe inside their mothers but they still get plenty of oxygen from their mothers' blood.

**3. FALSE** It's harder to breathe on a mountain top. That's because the air is so "thin." In other words, there isn't as much oxygen. So your lungs have to work a lot harder to get enough oxygen.

**4. FALSE** No one can hold his breath for fifteen minutes. In fact, the world's record for "breath holding" is 13 minutes, 47½ seconds, set by Robert L. Foster. But don't you try it—your body needs oxygen a lot more often than that. Doctors say that after 12 minutes without oxygen, you'll probably die.

**5. TRUE** Cigarette smoke is made up of many harmful gases—including a tiny bit of the poison arsenic in each puff.

**6. FALSE** Divers do not hold their breath as they come up. They blow air out! This evens up the pressure in their lungs with the water pressure outside.

**7. FALSE** Yawning is good for you. That extra deep breath gets oxygen into your body and sort of wakes you up. And talking about yawning usually makes you yawn, too. So go ahead and yawn if you want. In fact, now you probably won't be able to stop!



# List of the Month Dinner Is Served

by Ellen Weiss

Everybody in the world does not eat cheeseburgers. Generally, people eat what they can find where they live. For instance:

**Kangaroo** Food is difficult to come by for the Aborigines of Australia. When a kangaroo is caught it's time to celebrate. The kangaroo is thrown whole into a roasting-pit while everyone stands around and waits. After the kangaroo has been cooked a little, the feast begins



**Wild Animals** When big game was more plentiful in Africa, marrow from the bones of giraffes was one of the most prized delicacies. Another lovely dish was hippo lard (or fat), which is supposed to be sweet enough to eat raw.



**Iguanas** An iguana is a large lizard found in the tropics of North and South America. It lives in trees and is three to six feet long. Iguanas are sold live in the markets of South America. The back is supposed to be the best part. Some people say it tastes like chicken.



**Fugu** If you like to live dangerously, you can go to Japan and try some fugu. This is a kind of blowfish which has a deadly poison in parts of its body. It's supposed to taste great, and millions of people try it each year. Their fugu must be cleaned and prepared by cooks with a special license. Even so, 200 people die every year.



**Snails and Roses** In France, a country known the world over for its great cooking, a favorite dish is snails. They are served in their shells with butter and garlic. And in the same meal with your snails, you might be served candied flowers for dessert.



**Eggs** In China, Thousand Year Eggs are a great treat before a meal. They are usually raw duck eggs which are buried in a special kind of clay—not for a thousand years, but for about eight weeks. When they are dug up, the outsides are black. The insides should be bright blue and green, and firm. They taste slightly fishy.



**Insects** Insects live almost everywhere, and can provide a lot of nourishment. In Southeast Asia, one can find red ant soup. In some countries, people eat locusts. In Kenya, Africa, children collect flying termites after it rains. They eat some and stuff the rest into tin cans.



**Alligators** A few years ago, the American alligator was an endangered animal. Now the meat of these cuddly creatures is turning up on the menus of fancy restaurants in certain parts of the United States. Alligators are raised on farms. Their meat is low on fat and supposed to taste like our old friend, the chicken.





# Timeline



Before they had gears, many bikes had giant wheels.

## The History of Bicycles

by Connie Rosenblum

### Past

The first bikes, built 200 years ago, were made of wood and called hobby horses. "Hobbies" moved like scooters. You pushed them with your feet, but you couldn't steer or stop them!

In 1817, a German inventor added a steering bar to the front wheel. That helped on turns. But riding was still hard work.

One day in 1861, Ernest Michaux was watching his father repair a hobby. "Why don't we add a crank to the front wheel?" he asked. "Then a

person could turn the wheel with his foot." That was it! Soon, people everywhere were pedaling the Michaux bike. Its wooden wheels and iron tires gave a bumpy ride. The bike quickly got a nickname: the boneshaker.

Riding a boneshaker was slow going. Each time you turned the pedal, the front wheel turned once. Giant wheels made pedaling easier. But if you fell, it was a long way to the ground!

Still, bike riding became more popular. It even changed the way people dressed. In 1849, Amelia Bloomer designed special pants for a woman to wear under her dress while cycling. The pants were named...bloomers!

## Present

Today, bikes are stronger, faster and lighter. In the old days, bikes only had one speed—as fast as the rider could pedal. Now we have 10- and 15-speed bikes. They change pedal speeds quickly and easily, by using gears.

Gears are those tiny wheels with spiky outsides. They fit together and turn together. There are three or four little gear wheels inside a bike's wheel. Together they keep the bike's wheel spinning. In this way, you get more distance for every push on the pedal. You also get more control of your bicycle on steep hills and wet roads.

There's one bicycle that doesn't have to worry about wet roads. Its name is the Gossamer Albatross and it can fly! The Albatross is a bicycle with wings like a glider. It is made of very lightweight plastic. When the cycle is pedaled, it turns a propeller.

In June, 1979, Bryan Allen pedaled this "fly-cycle" from England to France. That was a trip of more than 30 miles! It was the first time in history a person had flown so far using only his muscle power. Bryan and the Albatross's inventor, Paul MacCready, won a prize of \$200,000.

# Timeline



The Gossamer Albatross is one of the world's first flycycles.



# Timeline



## Future

What will the bike of the future look like? Will it have a dome you can use for cover during rainstorms? Will new kinds of gears make them go even farther and faster? Will there be sea bikes you can pedal on water?

You decide. Design your future bike here. Be

sure to write down what it does. Then send it, along with your name and address, to:

**Timeline**  
**3-2-1 CONTACT**  
**P.O. Box 599**  
**Ridgefield, NJ 07657**



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# Did It!

## Answers

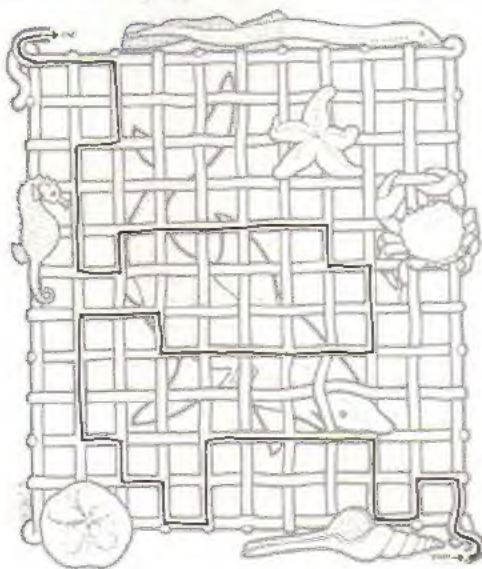
### Riddles (page 30)

1. Because it had to say  
goodbye to its honey.

B-E Q-R-W-A-V-I  
L-C-A-U-S F-L-E  
T-O-V-G-E-I-T-H  
C-Y-L-Z-P-T-D-A  
P-G-Y-A-S-O-R-A  
X-O-O-D-B-Y-E-T  
G-J-M-F-S-T-I-O  
Y-K-A-L-H-D-R-S  
B-V-E-P-O-N-E-Y

2. The roller coaster.

### Shark Maze (page 31)



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### Jigsaw Puzzles

(page 32)



## Next Month!

Here's a sample of what you will find  
in the next issue of 3-2-1 CONTACT...

### Close Encounters

Get a look at the inside of the alien space-  
ship in the new version of the hit movie.

### Invent a Planet

Become a real science fiction writer  
and win our new contest.

### Sci-Fi Activity Section

Lots of science fiction fun with puzzles,  
games, quizzes and things to do.

**Plus Factoids, Pocket  
Zoo, Any Questions  
and Much More!**



## Skyfacts: Earth

Each month SKYWATCH will bring you a close-up look at another planet or moon. Clip these pages and save them in a notebook. At the end of the year, you will have your own guide to the solar system.

# Skywatch



**Symbol** Earth's symbol at left is a circle with a cross. One line represents the equator. The other stands for a line running between the North and South Poles.



**Size** Earth is a medium-sized planet. It measures about 25,000 miles (40,000 km) around the equator. It is slightly flat at top and bottom, so distance around the poles is a bit less.



**Day** A day isn't 24 hours—it's really 23 hours, 56 minutes and four seconds.  
**Year** A year is 365¼ days. Every four years, the quarters combine to make the extra day of leap year.



**Temperature** Average near Earth's surface is 57°F (14°C). It gets hotter as you get closer to the core. Earth's center is liquid rock, at a temperature of 9,000°F (5,000°C)!

**Early Theories** People once thought the Earth was the center of the universe and that all the planets, the sun, and the stars moved in orbits around it. Each planet was attached to the surface of a hollow shell turning in space. The shells (one for the sun, one for each planet and one for all stars) fit one inside the other. Since they were invisible, the planets seemed to float freely in space.

**Atmosphere** About 99% of the atmosphere is nitrogen and oxygen. Besides giving you air to breathe, it shields you against harmful radiation from the sun.



**Surface** Water covers 70% of Earth. On land, the highest point is Mt. Everest at 29,028 ft. (8,848 m); the lowest, near the Dead Sea, is 1,299 ft. (396 m) below sea level.



**Moon** Earth's moon is about 240,000 miles (387,000 km) away. It has no air or water and no life exists there. The moon circles Earth once every 29½ days.



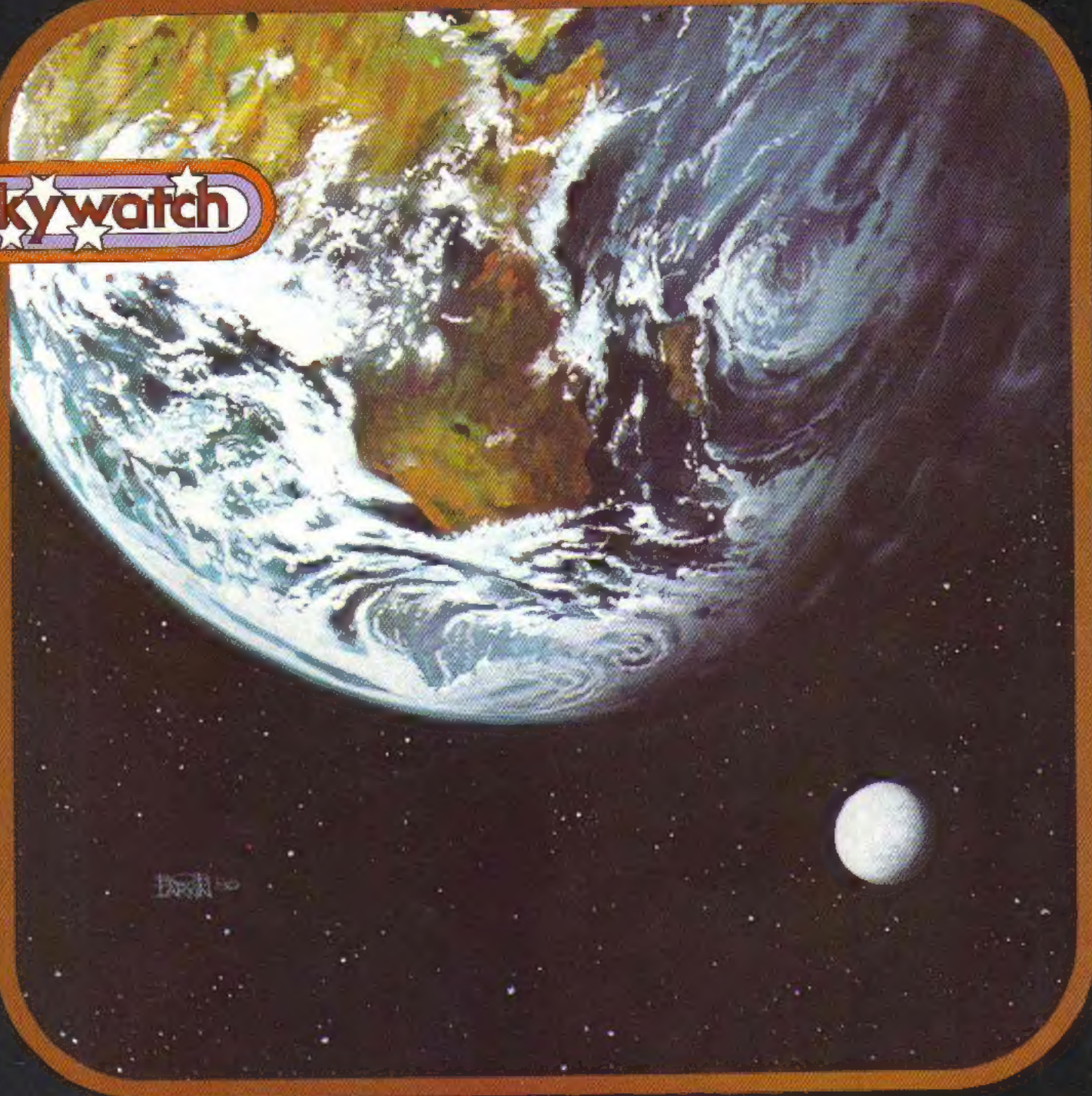
**You On Earth** Each square inch of your skin has 15 pounds (6.8 kg) of air pressing on it. That's 30,000 pounds (13,600 kg) over your whole body!



**Modern Theories** In the 1500s, Copernicus became one of the first to say this was not so. He and others, like Kepler, Tycho and Galileo, watched the motions of stars and planets. Using mathematics, they proved those motions could not be explained by the old theory. It finally became accepted that the sun is the center of the solar system and that Earth is just one planet orbiting it.



## Skywatch



Above: A view of Earth and its moon.

### Focus on Earth, Our Home Planet

Earth is the third planet in the solar system. It orbits 93 million miles (150 million km) from the sun. Earth seems to be the only planet in our solar system with the right amount of heat, light, air and water to support life.



The size of Earth,  
compared to the  
Moon and Sun.

SUN

### Skysight

If you could see Earth from Mars, you might call it the blue planet. The water on most of its surface, plus effects of the atmosphere, make it look blue.

(continued on  
page 47)